AUTHOR INDEX

Aaronson, S. 63, 72
Aaronson, S. A. 39, 45
Abe, Y. 240, 242
Abler, A. 107, 109, 110, 116
Abraham, K. M. 134, 138, 140
Abraham, S. 91, 100, 105
Abrams, R. 47, 56, 58
Abrood, M. E. 84, 87
Ackerman, D. 175, 176, 192
Ackerman, J. J. H. 218, 229
Adachi, K. 100, 106
Adamik, R. 145, 152
Adams, J. M. 151, 152
Adamson, J. 232, 241
Adkins, B. 138, 142
Aftring, R. P. 246, 251, 262
Agostinis, P. 266, 267, 269, 275, 279, 282, 283, 306, 307, 324
Aitken, A. 246, 255, 261
Ajl, S. L. 352
Akerboom, J. P. A. 17, 18
Akers, H. A. 245, 258, 260
Akiba, T. 289, 303
Akiyama, S. -I. 358, 372
Akkerman, J. W. N. 68, 71, 73
Alakhov, V. Yu. 331–355
Albert, D. A. 57, 59
Albrand, J. P. 227, 230
Alekseev, A. 345, 354
Alemany, S. 109–117, 123, 127, 130, 307, 308, 309, 310, 319, 325, 326
Alesenko, A. V. 156, 169
Alexander, D. 267, 282
Alexander, M. C. 109, 112, 113, 117
Alexander, R. W. 67, 70, 73
Allard, W. J. 80, 81, 86
Allen, G. 200, 211
Allen, M. B. 102, 107
Allinger, N. L. 360, 373
Allmann, D. W. 310, 326
Almendral, J. M. 157, 170
Alonso, M. T. 70, 73
Alpes, J. D. 145, 147, 151
Alt, F. W. 357, 372
Alvarez, J. F. 109, 115, 116
Amatruda, J. M. 311, 312, 326
Ames, B. N. 183, 193
Amiradgibi, S. 175, 176, 192
Anastasi, A. 176
Andero, C. S. 121, 130
Anderson, C. W. 298, 304
Anderson, W. B. 156, 157, 167, 170
Andreone, T. 102, 103, 107, 108
Angel, P. 138, 142
Antich, P. P. 227, 230
Anukarahanonta, T. 240, 242
Aonuma, S. 181, 193
Aoyama, K. 102, 107
Appella, E. 291, 293, 294, 303
Applebaum, R. 349, 355
Aragon, C. 102, 107
Archer, D. L. 331, 333, 338, 352, 354
Ardawi, M. S. M. 14, 22, 23, 28, 29, 30, 31, 32
Arino, J. 312, 326
Arion, D. 168, 171
Arkhipenko, Yu. V. 183, 184, 193
Arnheim, N. 146, 152
Arnould, J. -M. 175, 176, 180, 192
Aronow, M. S. 67, 73
Ashendel, C. L. 63, 65, 66, 72, 133, 136, 140
Ashmun, R. A. 360, 372
Ashser, D. M. 384, 386, 392
Aspetov, R. D. 338, 354
Assan, R. 91, 92, 105, 106
Auger, K. R. 135, 141
Austen, K. F. 378, 391
Aviv, A. 67, 73
Aviv, H. 292, 303
Avruch, J. 109, 112, 113, 117
Awad, A. B. 156, 169
Axel, R. 145, 152

Babizhaev, M. A. 188, 194
Bacas, T. 334, 353
Bach, N. J. 362, 373
Bai, D. H. 91, 93, 106
Bailey, E. 91, 100, 101, 105, 107
Bajaj, J. S. 105
Bakkesr, M. 384, 386, 392
Balint, Z. 156, 169
Ball, E. H. 265, 281
Ballard, F. J. 91, 100, 102, 105, 107
Ballou, L. M. 266, 282
Bando, Y. 388, 392
Bannasch, P. 32
Bannerjee, D. 258, 263
Bannikov, A. I. 337, 353
Banno, Y. 378, 382, 391
Barbacid, M. 75, 77, 80, 85, 145, 149, 150, 151, 152

Barker, H. M. 307, 324
Barnabei, O. 155–172
Barnea, A. 331, 353
Barnett, C. R. 22, 25, 31
Barris, E. 311, 312, 326
Barth, P. 197, 209, 211
Bartley, W. 91, 100, 105
Basu, M. 148, 153
Bate-Smith, E. C. 182, 193
Batrukova, M. A. 185, 194
Battey, J. F. 93, 106
Bauer, C. H. 231, 241
Bavykina, N. I. 185, 194
Baylink, D. J. 266, 281, 282
Beach, D. 168, 171, 276, 280, 284, 285
Beale, E. G. 102, 107
Beatty, C. 143–153
Beaudry, M. A. 91, 105
Beck, W. T. 357–373
Beeckmans, S. 290, 303
Beggs, M. 246, 251, 252, 253, 262, 263
Beiderman, B. 77, 78, 81, 82, 85, 86
Bell, H. 309, 326
Bell, J. 134, 135, 136, 141
Bell, R. M. 165, 167, 171
Belle, R. 274, 279
Benabid, A. L. 227, 230
Benjamin, B. W. 109, 117
Benjamin, T. L. 134, 136, 139, 140, 141
Bentley, D. L. 298, 304
Berezney, R. 156, 157, 169, 170
Berg, P. 291, 303
Bergdoll, M. S. 331, 351, 352, 355
Bergel F. 208, 209, 212
Berger, U. 231–242
Bergmeyer, H. U. 219, 227, 228, 229, 242
Berk, B. C. 67, 70, 73
Berridge, M. J. 157, 164, 170, 171, 347, 354
Berry, M. N. 247, 262
Bertics, P. C. 64, 72
Bertino, J. R. 4, 9, 11, 357, 372
Beryreuther, K. 382, 392
Besharse, J. C. 246, 261
Betley, M. J. 351, 355
Betts, C. R. 35, 45
Bhagat, B. 342, 354
Bialojan, C. 267, 277, 283
Biedler, J. L. 358, 360, 372
Biellman, J. -F. 197, 209, 211
Bigay, J. 77, 85
Billi, A. M. 157, 171
Birnbaumer, L. 76, 85
Birnboim, H. C. 333, 353
Blackmore, P. F. 322, 327
Blackshear, P. S. 164, 171
Blair, D. G. 80, 82, 83, 86
Blakeley, D. M. 157, 170
Blakley, R. L. 11
Block, K. P. 245, 246, 251, 261, 262, 263
Blow, J. 280, 285
Blumenthal, D. K. 121, 129
Bogen, P. D. 261
Boggan, J. E. 228, 230
Bohren, K. 197, 205, 206, 211, 212
Boldyrev, A. A. 175–194
Bolen, J. B. 138, 139, 142
Bollen, M. 305–327
Bolognino, M. 311, 312, 326
Bolton, M. C. 27, 32
Bombsztyk, K. 67, 73
Bonventre, P. F. 331, 333, 338, 352, 354
Booher, R. 276, 280, 285
Bordwell, K. L. 311, 312, 326
Bosch, F. 312, 322, 326, 327
Bosch, L. 87
Bosia, A. 68, 73
Bot, G. 317, 327
Bottomley, P. A. 217, 229
Bourne, H. R. 75–87
Bouscarel, B. 322, 327
Boyd, T. A. 245, 260
Boyer, D. 324
Boyer, J. 279, 284
Boyer, P. D. 281, 282
Boyle, W. J. 138, 142
Boynton, A. L. 134, 136, 141
Bradford, A. P. 246, 255, 261
Bradford, M. 198, 211, 333, 353
Branden, C. I. 208, 212
Brandt, I. K. 257
Branlant, G. 198, 199, 211
Brass, L. F. 69, 73
Braunstein, A. 212
Brautigan, D. L. 307, 325
Bravo, R. 157, 170
Bregestowsky, P. 345, 354
Brierley, C. H. 307, 308, 309, 325
Britsch, B. 233, 242
Brizuela, L. 168, 171
Brock, T. A. 67, 70, 73
Brown, A. M. 76, 85
Brown, G. K. 256, 263
Brown, K. D. 157, 164, 170
Brown, T. A. 311, 326
Brown, T. R. 226, 227, 230
Brugge, J. S. 133, 140
Brulfert, J. 123, 125, 127, 130, 131
Bruzzone, R. 345, 354
Buchanan, B. B. 121, 129
Buchanan-Bollig, I. C. 123, 130
Büchsel, R. 231, 241
Buckley, A. R. 156, 157, 168, 170
Budde, R. J. A. 126, 127, 131

Buell, M. V. 208, 212
Buller, A. L. 357, 372
Bullock, B. 197, 206, 211, 213
Bunin, A. Ya. 188, 194
Burchall, J. J. 11
Burdon, R. H. 211
Burgisser, H. 205, 212
Burlakova, E. B. 156, 169
Burnell, J. N. 121, 130
Burns, J. A. 15, 16, 19, 20, 31
Burns, M. 311, 312, 326
Buse, M. G. 246, 251, 262, 263
Buxser, E. S. 331, 333, 352
Buxser, S. 338, 354
Byrne, W. L. 17, 21, 31

Cabello, M. A. 109, 116
Cahill, A. L. 255, 349
Calalb, M. B. 67, 73
Caliendo, A. 102, 107
Calissano, P. 339, 354
Campbell, D. G. 307, 325
Camps, T. 309, 326
Cantley, L. 134, 135, 141
Cantley, L. C. 134, 135, 141
Cantournet, B. 267, 282
Capitani, S. 155–172
Capon, D. J. 145, 152
Cardell, R. R. 308, 325
Carling, D. 308, 309, 325
Carlson, R. 331, 333, 334, 352, 353
Carper, D. 197, 206, 211
Carson, D. A. 57, 59
Carter, P. J. 121–131
Casey, P. J. 76, 85
Cashel, J. A. 109, 110, 116
Casnellie, J. E. 311, 312, 326
Cave, C. F. 155, 159
Cayla, X. 265–285, 306, 307, 324
Ceckler, T. L. 221, 230
Chabre, M. 77, 85
Chakravarthy, B. 135, 136, 137, 141
Chalker, D. 310, 326
Challoner, E. 28, 29, 32
Chambard, J. C. 168, 172
Chambon, P. 291, 303
Chan, B. L. 115, 117
Chan, J. R. A. 266, 281
Chan, W. S. 266, 282
Chandra Rajan, J. 219, 229
Chang, C. -M. 4, 11
Chang, F. H. 77, 81, 82, 85
Charbonneau, H. 266, 274, 280, 281
Chardin, P. 145, 152
Chekhonin, V. P. 337, 353
Chen, H. -C. 145, 152
Chen, L. B. 266, 282
Chen, S. S. 207, 212
Cheng, K. 311, 326
Cheng, S. H. 134, 140
Cheng, Y. -C. 56, 59
Cheng, Y. S. E. 266, 282
Chernoff, J. 266, 282
Cheung, R. K. 343, 346, 354
Chi, M. H. 77, 81, 82, 85
Chiasson, J. L. 91, 105
Chichibu, K. 378, 382, 391
Chida, K. 63, 65, 66, 72
Chirgwin, J. M. 248, 263
Chiu, R, 138, 142
Chollet, R. 123, 125, 126, 127, 130, 131
Chopra, I. J. 101, 107
Chow, N. I. 150, 152
Christensen, H. N. 208, 212
Chua, B. H. 245, 260
Cicirelli, M. F. 266, 280, 281
Cimbala, M. A. 91, 93, 102, 106, 107
Cirtain, M. C. 358, 360, 362, 372, 373
Clanton, D. J. 80, 82, 83, 86, 87
Clapper, M. L. 357, 372
Clardy, J. 277, 284
Clark, B. F. C. 77, 79, 80, 82, 83, 85
Clark, D. G. 316, 327
Clark, R. 146, 152
Clark, S. G. 83, 87
Clary, G. L. 15, 17, 18, 31
Cleveland, D. W. 112, 117
Clinton, G. M. 266, 282
Clow, C. L. 256, 263
Coccia, E. M. 339, 354
Cocco, L. 155–172
Codina, J. 76, 85
Coetzee, M. L. 155, 169
Coffey, D. S. 156, 157, 169
Coffino, P. 78, 86
Cogan, M. C. 64, 72
Cohen, M. P. 196, 197, 211
Cohen, P. 121, 123, 127, 129, 130, 131, 261, 266, 282, 305, 306, 307, 308, 309, 310, 314, 319, 322, 324, 325, 326
Cohen, P. P. 207, 212
Cohen, P. T. W. 307, 324
Cole, R. D. 156, 169
Collazos, J. M. 70, 73
Collins, M. K. L. 157, 170
Conrad, E. 115, 117
Conrad, S. 205, 211
Conrad, S. M. 208, 212
Cook, K. G. 246, 251, 252, 255, 261
Cooke, M. P. 134, 138, 140
Coombes, R. C. 218, 219, 220, 221, 223, 224, 229, 230
Coombs, T. L. 208, 212

Cooney, D. A. 35, 45
Cooper, G. M. 80, 82, 83, 86, 87
Cooper, J. A. 158, 165, 171, 265, 281
Coppock, D. L. 157, 170
Corbett, R. J. T. 227, 230
Corbett, T. H. 220, 221, 230
Cordell, B. 388, 392
Corkey, B. E. 109, 110, 116
Cornell, N. W. 227, 230
Cornwell, M. M. 357, 358, 372
Corps, A. N. 157, 164, 170
Cory, A. H. 58, 59
Cory, J. G. 47–59
Cory, S. 151, 152
Cossman, J. 145, 151
Coulson, A. R. 247, 262, 291, 303
Coupe, C. 91–108
Courtneidge, S. A. 134, 140
Cowan, K. H. 357, 372
Crabb, D. W. 245–263, 256, 257
Crabtree, B. 14, 22, 23, 30
Craft, C. 197, 206, 211
Cragoe, E. J. 64, 67, 68, 70, 72, 73
Craig, I. 299, 304
Cramer, P. L. 4, 11
Creutz, C. E. 137, 138, 142
Crinstein, S. 343, 354
Croce, C. M. 145–153
Cromlish, J. A. 195, 197, 198, 205, 210, 211
Cross, R. L. 199, 211
Crowe, P. D. 156, 157, 168, 170
Crumpton, M. J. 267, 282
Cuatrecasas, P. 107, 109, 115, 116
Cuendet, G. S. 92, 106
Cundy, K. C. 183, 193
Curi, R. 28, 29, 32
Curnow, R. T. 308, 325
Curran, T. 133, 134, 140
Cussel, D. 70, 74
Cyert, M. S. 276, 277, 280, 284
Czech, M. P. 109, 117

D'Alonzo, J. S. 80, 83, 86
Da Cruz Silva, O. B. 307, 324
Dahl, T. S. 187, 194
Daikoku, S. 388, 392
Damuni, Z. 246, 261, 262
Daniel, T. O. 67, 72
Danks, M. K. 360, 372
Danner, D. J. 246, 254, 261, 263
Darnell, J. 93, 106
Das, M. 148, 153
Davidson, W. S. 209, 212
Davis, E. J. 247, 258, 259, 262
Davis, K. 382, 392
Davis, L. G. 93, 106
Davis, R. W. 149, 153, 291, 303
Davison, A. M. 156, 169
Dawson, R. M. C. 159, 171, 199, 211
De Robichon-Szulmajster, H. 231. 241
De Vos, A. M. 77, 79, 80, 81, 83, 85, 86
De Wulf, H. 312, 326
Debabov, V. G. 333, 351, 353
Decaux, J. F. 91, 105
Decker, K. 231, 239, 240, 241
Decorps, M. 227, 230
Defouck, C. 384, 386, 392
Defranco, A. L. 145, 151
Defreyn, G. 307, 325
Del Giacco, R. 231, 241
Deli, E. 156, 165, 170
Delwart, E. 145, 152
Dempsey, W. B. 208, 212
Demuth, P. 221, 227, 230
Dennihy, D. T. 109, 117
Dennis, J. A. 256, 263
Denton, R. 282
DePaoli-Roach, A. A. 246, 261
Der, C. J. 82, 83, 87
Deterre, P. 77, 85
Deutsch, C. 344, 354
Devanney, F. 333, 353
Devlin, E. 256, 263
Dexter, P. 245–263
Di Francesco, C. 206, 213
Di Luzio, A. 339, 354
Diamond, J. 180, 193
Dibner, M. D. 93, 106
Dicenzo, D. 109, 116
Dieckmann, M. 291, 303
Dietzchold, B. 197, 206, 211
Diltz, C. D. 266, 274, 280, 281
Dion, R. L. 35, 45
Disela, C. 145, 152
Dix, D. B. 77, 85
Dixon, J. E. 91, 93, 106
Dobrynina, O. V. 176, 180, 192
Dohm, G. L. 246, 262
Doll, J. 233, 242
Doly, J. 333, 353
Dombradi, V. 266, 282, 317, 327
Doncaster, H. D. 123, 130
Donigian, D. W. 361, 373
Doonan, J. H. 276, 280, 285
Doonan, S. 296, 303
Dopere, F. 308, 309, 310, 318, 319, 325, 326
Doppler, W. 63–74
Doree, M. 280, 284
Dotto, G. P. 137, 141
Doughty, C. C. 205, 208, 211, 212

Downes, C. P. 134, 141
Downward, J. 265, 281
Draetta, G. 280, 284
Drucker, B. 280, 284
Dubler, R. E. 311, 326
Dudkin, S. M. 348, 354, 355
Dumont, J. E. 282
Dumortier, K. 268, 278, 283
Dunne, M. J. 345, 354
Dunphy, W. G. 277, 280, 284
Dupin, A. M. 183, 184, 185, 188, 189, 193, 194
Durand, G. 91, 106
Durant, J. R. 220, 221, 230
Durkin, J. P. 134, 135, 136, 137, 140, 141, 142
Dussault, J. H. 101, 107
Duvakin, I. A. 331, 341, 352

Eagle, H. 13, 14, 24, 30
Eaton, S. W. 102, 107
Eble, J. N. 27, 31
Eccleston, J. F. 77, 85
Echevarria, C. 127, 131
Edelman, A. M. 121, 129
Edenberg, H. J. 248, 249, 256, 257, 262
Edgar, D. 339, 354
Eichberg, J. 159, 171
Eichler, H. -G. 26, 24, 31
Eisenman, R. N. 298, 304
Eisenstein, R. S. 246, 251, 262
Eklund, H. 208, 212
Elford, H. L. 47, 56, 58
Elliott, D. C. 199, 211
Elliott, W. H. 199, 211
Elsas, L. J. 246, 254, 261, 263
Elwyn, D. 17, 21, 31
Emelyanenko, E. I. 348, 355
Engel, P. C. 207, 212
Engstrom, Y. 47, 56, 59
Ensminger, W. B. 11
Eppenberger, U. 64, 72
Erickson, S. K. 156, 169
Erikson, E. 266, 275, 282
Erikson, R. L. 266, 275, 282
Eriksson, S. 47, 56, 58, 59
Erin, A. N. 189, 194
Ermakov, L. M. 333, 351, 353
Espinal, J. 252, 253, 263
Espino, P. C. 134, 140
Estrin, C. R. 102, 107
Eva, A. 39, 45
Evanochko, W. T. 220, 221, 227, 230
Everitt, M. 378, 391
Eversole-Cire, P. 81, 87
Ewing, C. M. 147, 152
Exton, J. H. 91, 105, 133, 134, 135, 140, 322, 327
Ezepchuk, Yu. V. 338, 354

Fabbro, D. 64, 72
Facchini, A. 156, 157, 169
Faist, K. 127, 131
Falcieri, E. 158, 163, 164, 165, 171
Fan, J. 3–12
Fantania, H. R. 246, 252, 261
Farkas, I. 306, 310, 311, 312, 324
Farley, J. R. 266, 281, 282
Farooqui, A. A. 345, 354
Farooqui, T. 345, 354
Farr, A. L. 159, 171
Fasella, P. M. 212
Fatania, H. R. 245, 261
Fauler, J. 231, 233, 239, 240, 241
Favera, R. D. 39, 45
Favre, M. 333, 353
Fearnley, I. M. 246, 255, 261
Fedarko, N. S. 115, 117
Fedyna, J. S. 182, 193
Feig, L. A. 80, 83, 86
Feinberg, A. P. 93, 106
Feinstein, M. B. 70, 73
Feliu, J. E. 109, 116, 313, 327
Fell, D. A. 13–32
Felsenfeld, A. 291, 293, 294, 303
Felsted, A. R. 360, 372
Felsted, R. L. 358, 360, 372
Felz, K. 91, 93, 102, 106
Ferber, E. 14, 22, 30
Ferguson, D. 209, 212
Ferraris, R. P. 180, 193
Ferre, P. 91–108
Ferrini, U. 291, 293, 294, 303
Fewson, C. A. 121–131
Fiebig, H. 63, 65, 66, 72
Fields, A. P. 157, 171
Filonenko, A. V. 183, 193
Financsek, I. 36, 45
Fine, B. P. 67, 73
Finkel, T. 82, 87
Fischer, E. H. 207, 212, 266, 274, 280, 281, 282, 317, 327
Fischer, H. 333, 334, 353
Fisher, D. A. 101, 107
Fisher, S. G. 112, 117
Fleischer, A. E. 47, 56, 58
Flynn, T. G. 195–213
Foa, N. L. 105
Foa, P. 105
Fojo, A. 358, 372
Foker, J. 14, 30
Fong, H. K. W. 81, 87

Fonstein, M. Yu. 333, 351, 353
Fontana, A. 339, 354
Foray, M. F. 227, 230
Ford, J. M. 358, 370, 372
Forrey, A. W. 207, 212
Forster, A. 206, 213
Foulkes, J. G. 266, 275, 282
Fox, J. A. 107, 109, 116
Franchi, A. 168, 172
Franks, D. J. 135, 136, 137, 141
Frappier, L. 47, 56, 58
Freeman, D. 226, 227, 230
Freese, M. 47, 56, 58
Freisheim, J. H. 3, 5, 11
Freissmuth, M. 77, 85
Frenster, J. H. 155, 156, 157, 169
Frentz, R. 176
Fresno, M. 67, 73
Friedman, D. 157, 167, 168, 170
Friend, D. S. 247, 262
Fritisc, E. F. 36, 45
Fujiki, H. 267, 283
Fujikura, T. 135, 138, 141
Fujioka, M. 202, 209, 211
Fujita, J. 388, 392
Fujita-Yamaguchi, Y. 311, 326
Fukuda, H. 231, 240, 241, 242
Fukui, Y. 134, 141
Fukusen, N. 378, 391
Fuller, F. 382, 392
Funder, J. 70, 73
Fung, B. K. K. 81, 86
Furuya, W. 70, 74

Gabbay, K. H. 195, 197, 206, 211, 213
Gadal, P. 125, 127, 130, 131
Gadian, D. 218, 229
Gahan, P. B. 155, 169
Gajdusek, C. 384, 386, 392
Gallo, R. C. 39, 45
Gallwitz, D. 145, 152
Ganapathi, M. K. 266, 282
Gandemer, G. 91, 106
Gapski, G. R. 4, 11
Garcea, R. L. 134, 141
Garvin, A. M. 134, 138, 140
Garwood, M. 228, 230
Gasser, T. 231, 233, 239, 240, 241
Gaulton, G. 109, 116
Gautier, J. 280, 284
Gavalas, N. A. 123, 130
Gebeyehu, G. 35, 45
Gelfand, E. W. 343, 346, 354
Gelmann, E. P. 39, 45
George, C. B. 48, 59
Gerace, L. 168, 172
Gergely, P. 305–327
Gerok, W. 240, 242
Ghanta, V. K. 220, 221, 230
Ghigo, D. 68, 73
Gibbs, C. J. 384, 386, 392
Gibbs, E. M. 115, 117
Gibbs, J. B. 80, 81, 83, 86
Gibson, D. M. 310, 326
Gibson, R. 245–263
Gilbert, W. 291, 303
Gill, G. N. 64, 72
Gillim, S. E. 246, 247, 250, 251, 253, 262
Gilman, A. G. 76, 77, 78, 81, 82, 85, 86, 145, 150, 152
Gilmour, R. S. 155–172
Gimbrone, M. A. 67, 70, 73
Gimenez, C. 102, 107
Giovanella, B. C. 227, 230
Girard, J. 91–108
Girard, P. R. 156, 157, 164, 170, 171
Gjinovci, A. 103, 107
Glaser, L. 70, 74
Glazer, R. I. 35, 45
Glenner, G. G. 382, 391
Glickson, J. D. 220, 221, 227, 230
Glinsmann, W. H. 307, 325
Glisson, B. 357, 372
Glover, C. J. 358, 360, 372
Glover, D. M. 153
Glover, J. L. 27, 31
Goeddel, D. V. 145, 152
Gold, M. R. 145, 151
Goldberg, A. L. 245, 260
Golden, A. 133, 140
Golubeva, E. E. 340, 354
Gomez-Foix, A. M. 312, 326
Gonzalez, D. H. 121, 130
Gonzalez-Dewhitt, P. 382, 392
Goodridge, A. G. 100, 107
Goodwin, G. H. 166, 171
Goodwin, G. W. 245–263
Gopichand, Y. 277, 284
Gorbunova, A. V. 176, 180, 192
Gordon, J. 147, 152
Goris, J. 265–285, 306, 307, 308, 309, 324, 325, 326
Gorman, C. 149, 153
Gottesman, M. 357, 358, 372
Gottschalk, K. W. 109, 115, 117
Goudsmit, J. 384, 386, 392
Gould, G. 156, 169
Gould, G. W. 115, 117
Graber, M. 63, 72
Graf, T. 138, 142
Granner, D. K. 102, 103, 107, 108
Granner, M. 102, 107
Graslund, A. 47, 56, 58

Gratecos, D. 317, 327
Graves, D. J. 269, 283
Graziano, M. 77, 81, 82, 85
Graziano, M. P. 77, 85
Green, A. 311, 312, 326
Green, M. R. 291, 303
Greenberg, B. 382, 392
Greengard, O. 91, 102, 106
Greengard, P. 349, 355
Greenwell, P. 207, 212
Griffiths, J. R. 217–230
Grinstein, S. 63, 65, 67, 68, 70, 71, 74, 346, 354
Grob, P. J. 339, 354
Groen, A. K. 15, 16, 17, 18, 20, 22, 31
Groner, B. 63, 64, 65, 66, 72
Gross-Bellard, M. 291, 303
Grove, T. H. 218, 229
Grün, B. R. 231–242
Grunicke, H. 63–74
Gruppuso, P. A. 307, 325
Grynkiewicz, G. 64, 72
Gschwendt, M. 350, 355
Guinovart, J. J. 312, 326
Gulevitch, V. S. 175, 176, 192
Gulyaeva, N. V. 183, 193
Gupta, R. 357, 372
Gusella, J. F. 382, 392
Gusterson, B. A. 217–230
Guynn, R. W. 15, 17, 18, 23, 31

Ha, J. -M. 388, 392
Haaijman, J. J. 331, 352
Haddock-Russell, D. 156, 157, 168, 170
Hagag, N. 63, 72
Hahn, P. 91, 100, 105
Hains, F. O. 361, 373
Hait, W. N. 358, 370, 372
Haldar, S. 145–153
Halegova, S. 168, 172
Hall, A. 67, 73, 77, 85
Halleck, M. S. 284
Halliday, K. 79, 86
Hama, T. 181, 193
Hamaguchi, Y. 378, 382, 391
Hamilton, G. A. 195, 196, 211
Hamilton, I. D. 123, 124, 125, 128, 130
Hamilton, M. J. 156, 169
Han, A. C. 245, 246, 247, 249, 250, 251, 252, 254, 261, 262
Hanafusa, H. 134, 140, 141
Haney, P. M. 102, 107
Hanks, S. K. 129, 131
Hann, S. R. 298, 304
Hannun, Y. A. 165, 167, 171
Hansen, R. E. 208, 212
Hanson, R. W. 91, 93, 100, 102, 105, 106, 107
Haradahira, T. 231, 240, 241
Hardie, D. G. 255, 263, 308, 309, 325
Harke, C. A. 361, 373
Harnett, M. M. 145, 151
Harper, A. E. 245, 246, 247, 251, 261, 262
Harper, E. T. 310, 326
Harper, P. A. W. 256, 263
Harrap, K. R. 208, 209, 212
Harris, B. A. 78, 86
Harris, R. A. 245–263
Harrison, J. J. 168, 171
Hartl, F. -U. 298, 304
Hartley, J. L. 102, 107
Hartman, P. E. 187, 194
Harvey, R. 134, 140
Hasselblatt, A. 245, 261
Hatch, M. D. 121, 130
Hatori, N. 67, 73
Hatstead, T. A. J. 308, 309, 325
Hattori, S. 83, 87
Hattori, T. 384, 392
Haubruck, H. 145, 152
Hayles, J. 280, 284
Healy, P. J. 256, 263
Heerema, N. 35, 36, 42, 45
Hefferman, P. A. 265, 281
Heideman, W. 78, 86
Heinrich, R. 15, 16, 20, 31
Heldin, C. H. 135, 141
Hemming, A. 134, 140
Hemmings, B. A. 123, 127, 130
Hemmings, H. C. 349, 355
Hems, D. A. 312, 327
Henderson, G. B. 3, 4, 6, 10, 11
Hendrix, P. 265–285, 306, 307, 324
Henley, B. E. 110, 117
Henning, S. 91, 92, 94, 105
Henninger, H. 232, 234, 241
Henry, H. V. 111, 117
Herlyn, M. 164, 171
Herman, B. 133, 140
Hermann, J. 265–285, 306, 307, 324
Herrlich, P. 138, 142
Herrmann, R. 233, 242
Hers, H. -G. 312, 322, 327
Herschco, L. 70, 73
Herskowitz, I. 83, 87
Herzfeld, A. 17, 21, 31
Hescheler, J. 267, 277, 278, 283
Heslop, J. P. 157, 170
Hewlett, E. 115, 117
Hidaka, H. 165, 167, 171

Higgins, R. J. 228, 230
Hiraga, A. 308, 325
Hiraga, K. 289, 290, 292, 293, 303
Hirai, R. 138, 139, 142
Hiramoto, R. N. 220, 221, 230
Hirota, M. 267, 283
Hiryanna, K. T. 266, 282
Hishida, T. 145, 152
Hitier, Y. 92, 93, 101, 106
Hiwasa, T. 388, 392
Hochleitner, B. 63–74
Hodges, P. 357, 372
Hoffman, R. 35, 36, 38, 39, 42, 45
Hoflacher, J. 63, 65, 72
Hofmann, H. 63, 65, 66, 72
Hofmann, J. 63, 65, 72
Holbrook, P. 331, 352
Holbrook, S. R. 77, 78, 80, 86, 146, 148, 152
Holczinger, L. 156, 169
Hollan, S. R. 36, 39, 42, 43, 45
Holland, G. 91, 102, 106
Holstege, A. 231, 232, 233, 234, 239, 240, 241, 242
Holte, S. 233, 242
Homma, Y. 63, 65, 66, 72
Honnor, R. C. 308, 309, 322, 327
Hoppel, C. L. 299, 304
Horanyi, M. 36, 39, 42, 43, 45
Horinouchi, S. 333, 353
Horrocks, L. A. 345, 354
Hoshijima, M. 135, 138, 141
Hougland, M. W. 378, 381, 391
Houston, B. 109, 117
Hoverath, H. 233, 242
Howell, R. L. 221, 230
Hsiao, K. J. 266, 268, 282
Hsu, D. 382, 392
Huang, C. 64, 72
Huang, C. K. 333, 353
Huang, F. L. 156, 157, 168, 170, 307, 325
Huang, I. -Y. 331, 351, 352, 355
Huang, K. 156, 157, 168, 170
Huang, L. C. 109, 115, 117
Huang, M. 63, 65, 66, 72
Hubbard, M. J. 307, 309, 325
Hubbard, R. 24, 26, 31
Huber, J. L. A. 121, 130
Huber, S. C. 121, 123, 130
Hubsch, D. 157, 170
Huchon, D. 279, 284
Hudson, J. 17, 21, 31
Hudson, L. G. 64, 72
Hue, L. 312, 324, 327
Huennekens, F. M. 3–12
Hughes, J. L. 351, 355
Hull, W. E. 231–242
Hume, D. A. 14, 22, 30
Humphreys, J. 219, 221, 229
Humphreys, J. S. 246, 261
Hunt, R. D. 230
Hunt, T. 280, 285
Hunter, T. 138, 142, 265, 281
Hurlbert, R. B. 56, 59
Hurley, J. B. 81, 84, 86, 87
Hutton, J. C. 245, 261
Huynh, T. V. 149, 153
Hwang, Y. W. 82, 83, 87
Hyndman, D. J. 195–213

Iamura, H. 176
Ibrahim, S. 220, 230
Ichihara, A. 102, 107
Ido, T. 231, 240, 241, 242
Iglesias, A. A. 121, 130
Iida, H. 358, 372
Iizasa, T. 57, 59
Ikegaki, N. 145, 147, 149, 150, 151
Ikegami, T. 36, 39, 42, 43, 45
Iles, R. A. 226, 227, 230
Imagawa, M. 138, 142
Imahori, Y. 240, 242
Imbra, R. J. 138, 142
Improta, T. 339, 354
Inagaki, K. 209, 213
Inagaki, M. 165, 167, 171
Ingebritsen, T. S. 266, 282, 308, 325
Ingebritsen, V. M. 266, 282
Inoue, I. 388, 392
Irino, S. 36, 40, 41, 45
Irvine, R. F. 155–172, 347, 354
Ishihara, M. 115, 117
Ishiwata, K. 231, 240, 241, 242
Issad, T. 103, 108
Ito, H. 382, 385, 392
Itoh, H. 81, 87
Itoh, J. 231, 240, 241
Ives, H. E. 64, 66, 67, 72, 73
Iwanaga, S. 378, 391
Iynedjian, P. B. 91, 92, 93, 103, 106, 107

Jackson, R. C. 231, 239, 240, 241
Jackson, R. J. 291, 294, 303
Jackson, T. K. 311, 312, 326
Jackway, J. P. 145, 151
Jacrot, M. 227, 230
Jaffe, E. 145, 151
Jaggi, R. 63, 64, 65, 72
Jakobs, K. H. 333, 353
Jamdar, S. C. 91, 102, 106
Jancarik, J. 77, 79, 80, 81, 83, 85, 86
Jarai, G. 36, 39, 43, 45

Jarett, L. 107, 109, 110, 115, 116, 117
Jayaram, H. N. 35–45, 56, 59
Jefferson, L. S. 245, 260
Jeffery, J. 212
Jena, B. P. 266, 282
Jenkins, P. A. 249, 251, 263
Jessus, C. 265–285
Jewett, S. L. 207, 212
Jiao, J. A. 123, 125, 127, 130, 131
Jildevik, I. 47, 56, 59
Johns, D. G. 35, 45
Johns, E. W. 166, 171
Johnson, D. A. 378, 381, 391
Johnson, H. M. 333, 353
Johnson, P. 179, 182, 193
Johnson, R. J. 207, 212
Jonat, C. 138, 142
Jones, K. M. 199, 211
Jones, S. M. A. 255, 263
Jones, S. W. 266, 282
Jones, T. C. 230
Joseph, S. K. 69, 73
Juliano, R. L. 357, 372
Jungmann, R. A. 64, 72, 168, 171
Jurnak, F. 77, 79, 80, 82, 83, 85, 87

Kabanov, A. V. 337, 338, 353, 354
Kabara, J. J. 169
Kacser, H. 15, 16, 19, 20, 23, 31
Kadis, S. L. 352
Kador, P. 197, 206, 211
Kaftanova, T. M. 178, 192
Kagan, V. E. 183, 184, 189, 193, 194
Kahn, A. 101, 107
Kahn, C. R. 111, 117
Kaibuki, K. 135, 138, 141
Kamata, N. 63, 65, 66, 72
Kameyama, M. 231, 240, 241
Kanaho, Y. 333, 353
Kanarek, L. 290, 303
Kanazawa, Y. 231, 240, 241
Kao-Shen, C. S. 150, 152
Kaplan, D. 133, 134, 135, 136, 140, 141
Karabourniotis, G. 123, 130
Karim, A. M. 77, 85
Karin, M. 138, 142
Karsenti, E. 280, 284
Kartner, N. 357, 372
Kaslow, D. 82, 87
Kaslow, H. R. 82, 87
Kasperek, G. J. 246, 262
Kasuga, H. 111, 117
Kasvinsky, P. J. 182, 193
Katholi, C. R. 228, 230
Kato, M. 63, 65, 66, 72
Kato, Y. 65, 72
Katsunuma, T. 378, 382, 391
Katunuma, N. 377–392
Kaufman, R. J. 4, 9, 11, 357, 372
Kaufman, S. H. 147, 152
Kawahima, K. 231, 240, 241
Kawamoto, S. 165, 167, 171
Kawata, M. 145, 152
Kaziro, Y. 75, 77, 81, 85, 87
Kazlauskas, A. 158, 165, 171
Keehan, M. 157, 170
Keeler, M. 134, 141
Kellems, R. E. 357, 372
Keller, T. 134, 141
Kelley, J. A. 35, 45
Kelly, K. L. 107, 109, 110, 115, 116, 117, 166
Ken, R. 157, 167, 168, 170
Keppens, S. 310, 312, 326
Keppler, D. 32, 231–242
Kerr, D. S. 299, 304
Kervran, A. 91, 92, 105, 106
Kesselberg, M. 233, 242
Keutman, H. T. 109, 112, 117
Kido, H. 378, 380, 381, 384, 388, 391, 392
Kikuchi, A. 145, 150, 152
Kikuchi, H. 277, 284
Kikuchi, K. 308, 325
Kim, K. H. 91, 93, 100, 106
Kim, S. 145, 146, 148, 150, 152
Kim, S. -H. 77, 78, 79, 80, 81, 83, 85, 86
Kimber, I. 334, 353
King, M. W. 298, 304
Kinoshita, J. H. 197, 206, 211
Kinoshita, N. 276, 280, 285
Kinsella, B. T. 296, 303
Kinter, M. 109, 115, 117
Kirschner, A. 112, 117
Kirschner, M. W. 277, 280, 284, 285
Kirzon, M. V. 178, 192
Kiselev, O. I. 337, 353
Kiselev, V. I. 331–355
Kiss, L. 156, 165, 170
Kitaguchi, N. 382, 385, 392
Kittstein, M. 350, 355
Klaus, G. G. B. 145, 151
Klein, L. 219, 229
Klibanov, A. L. 337, 353
Kludge, M. 123, 130
Kluge, M. 127, 131
Klumpp, S. 308, 325
Kmiecik, T. E. 134, 140
Kneebone, P. 35, 36, 42, 45
Knittel, B. 228, 230
Knowles, R. G. 16, 17, 23, 31
Knox, W. E. 17, 21, 31
Kobayashi, K. 289, 290, 292, 293, 303, 378, 382, 391

Koch, S. 102, 103, 107, 108
Koga, P. G. 199, 211
Kohen, R. 183, 193
Kohler, H. 298, 304
Koito, A. 384, 392
Kolnick, E. M. 148, 150, 152
Kominami, E. 378, 382, 388, 391, 392
Kondo, J. 145, 152
Kondratyev, A. D. 189, 194, 240, 254
Koprowski, H. 164, 171
Kornbluth, S. 134, 140
Korshunova, G. A. 185, 194
Kote, Z. 36, 39, 42, 43, 45
Kotelevtsev, S. V. 189, 194
Kowaloff, E. M. 109, 117
Kozak, C. 147, 152
Kozak, M. 294, 303
Kozasa, T. 81, 87
Kraal, B. 87
Krainer, A. R. 291, 303
Kravtzova, T. N. 331, 337, 338, 341, 352, 353, 354
Krebs, E. 117
Krebs, E. G. 121, 129, 261, 266, 280, 281, 282, 324
Krebs, H. A. 227, 230
Kreistwirth, B. N. 351, 355
Kremmer, T. 36, 39, 42, 43, 45
Kriegstein, E. 245, 260
Kübler, W. K. 233, 242
Kuefner, U. 5, 6, 11
Kumar, H. 3, 11
Kumar, S. 266, 280, 281
Kundo, J. 145, 152
Kuntz, M. J. 245–263
Kunz, W. 233, 242
Kuo, J. F. 156, 157, 164, 165, 170, 171
Kuret, J. 309, 326
Kuribayashi, S. 231, 240, 241
Kuroki, T. 63, 65, 66, 72
Kushmerick, M. J. 226, 227, 230
Kuwano, M. 358, 372
Kwan, W. W. 180, 193
Kypta, R. M. 134, 140

L'Allemain, G. 70, 74
L'Italien, J. J. 81, 86
La Baume, L. B. 15, 17, 18, 31
La Cour, T. F. M. 77, 79, 80, 82, 83, 85
Labbe, J. C. 280, 284
Labourdette, G. 156, 157, 168, 170
Lacal, J. C. 63, 72
Laemmli, U. K. 110, 112, 117, 159, 171, 333, 353
Lai, H. C. J. 150, 152
Laks, M. J. 168, 171
Lamb, C. J. 129, 131
Lamers, W. H. 102, 107
Lamfrom, H. 134, 136, 139, 140
Lamperti, E. D. 382, 392
Land, H. 39, 45
Landis, C. A. 75–87
Lang, A. 156, 157, 169
Langford, M. P. 333, 353
Langunoff, D. 378, 391
Lapetina, E. G. 146, 147, 152
Lapis, E. 35, 36, 39, 42, 43, 45
Lapshin, S. Yu. 333, 351, 353
Larner, J. 109, 115, 117, 311, 326
Lau, K. H.-W. 266, 281, 282
Lau, K. S. 245, 246, 252, 261
Laursen, R. A. 81, 86
Lautenberger, J. A. 39, 45
Lawson, A. J. 220, 221, 230
Lawson, J. W. R. 227, 230
Lawton, M. A. 129, 131
Le Marechal, P. 125, 127, 130, 131
Leader, D. P. 307, 308, 309, 325
Lecam, A. 168, 172
Leder, P. 292, 303
Lee, E. Y. C. 266, 282
Lee, M. G. 280, 284
Lee, S. C. 344, 354
Lee, S. M. 205, 211
Leegood, R. C. 123, 130
Lehmann, J. 232, 241
Leis, J. P. 91, 93, 102, 106
Lemmon, S. K. 246, 254, 261, 263
Lenney, J. F. 180, 193
Leo, A. 361, 373
Leppla, S. H. 348, 355
Letcher, A. J. 156, 157, 164, 170
Leube, K. 231, 233, 239, 240, 241
Leutz, A. 138, 142
Levashov, A. V. 337, 338, 353, 354
Levine, A. 70, 73
Levinson, A. D. 83, 87
Levshina, I. P. 183, 193
Levy, H. R. 209, 212
Lewis, R. A. 378, 391
Lewis, S. K. 266, 282
Li, H. -C. 266, 268, 282
Libby, P. 135, 141
Licko, V. 82, 87
Lieberburg, I. 382, 392
Lieberman, I. 56, 47, 58
Lienhard, G. E. 115, 117
Lilly, M. B. 220, 221, 228, 230
Lim Tung, H. -Y. 123, 127, 130
Lin, M. -F. 266, 282
Ling, V. 357, 372
Linn, T. L. 109, 112, 117
Lisanti, M. P. 115, 117

Lloyd, A. C. 67, 73
Lockwood, E. A. 91, 100, 105
Loeb, J. E. 267, 282
Lofdahl, S. 351, 355
Loferer, H. 63–74
Loginov, B. V. 331, 341, 352
Lohrmann, U. 5, 6, 11
Long, E. O. 298, 299, 304
Look, A. T. 265, 281, 360, 372
Loomis, C. R. 165, 167, 171
Loos, J. A. 14, 30
Lopes-Vieira, O. 29, 32
Lopez, J. A. 219, 229
Lopez, N. G. 77, 78, 81, 82, 85, 86
Lopez-Alarcon, L. 312, 327
Lopez-Casillas, F. 91, 93, 100, 106
Lopez-Rivas, A. 67, 73
Lopina, O. D. 182, 193
Lorenz, W. J. 233, 242
Lowe, D. G. 145, 152
Lowry, O. H. 159, 171, 199, 211, 219, 229
Lu, Y. 80, 82, 83, 86
Luhowskyj, S. 311, 312, 326
Lund, K. 23, 31
Lundblad, R. L. 205, 207, 208, 212
Luo, X. C. 91, 93, 106
Lutrell, L. 115, 117
Lyles, T. O. 91, 100, 105
Lyonnet, S. 101, 107
Lyons, C. 195–213

Macara, I. G. 63, 65, 66, 72
Macdonald, R. J. 248, 263
Macdougall, L. K. 307, 325
Mach, B. 91, 92, 93, 103, 106, 298, 299, 304
Mackensie, S. 256, 263
Mackintosh, C. 127, 131
Magnusson, M. A. 103, 108
Maier, P. 127, 131
Maier-Borst, W. 232, 241
Malaisse, W. J. 245, 261
Maley, F. 231, 241
Malgaroli, A. 342, 354
Maller, J. 280, 284
Malthus, R. 316, 327
Maltseva, V. V. 189, 194
Malviya, A. N. 156, 157, 168, 170
Maly, K. 63–74
Manetas, Y. 123, 130
Maniatis, T. 36, 45, 291, 303
Mansell, M. M. 48, 59
Manzoli, F. A. 155–172
Marais, R. 267, 282
Maraldi, N. M. 155–172
Marcellus, R. C. 133–142
Marchiori, F. 269, 283
Marcus, D. M. 232, 241
Margolis, R. N. 308, 325
Mariash, C. N. 101, 107
Marimoto, M. 65, 72
Marks, F. 350, 355
Marliss, E. B. 92, 106
Marquadt, C. 14, 30
Marquez, V. E. 35, 45
Marshall, C. J. 67, 73
Marshall, F. 176
Marshall, M. 207, 212
Martelli, A. M. 155–172
Martensen, T. M. 265, 281
Marth, J. D. 134, 138, 140
Martin, B. L. 269, 283
Martin, Jr, D. W. 47, 56, 58
Martin-Requero, A. 322, 327
Martinek, K. 337, 353
Martins, R. N. 382, 392
Masmouldi, A. 156, 157, 168, 170
Mason, M. J. 63, 65, 67, 68, 71
Masters, C. L. 382, 392
Masters, S. B. 75–87
Matias, P. M. 77, 79, 80, 81, 83, 85
Mato, J. M. 109–117
Matsuhawa, T. 280, 284
Matsui, Y. 145, 152
Matsumoto, M. 47–59
Matsuoka, M. 81, 87
Matsuzawa, T. 231, 240, 241, 242
Mattera, R. 76, 85
Matteucci, A. 157, 171
Matthews, D. A. 5, 11
Matthews, J. T. 136, 141
Matveeva, N. K. 189, 194
Maudaule, P. 145, 152
Maxam, A. M. 291, 303
Maxwell, R. J. 220, 224, 230
May, S. W. 157, 171
Mayers, E. 265, 281
Mazzei, G. J. 156, 157, 170
Mazzotti, G. 156, 157, 170
Mcclatchey, A. I. 382, 392
McCormick, F. 77, 81, 85, 146, 152
McDonald-Bravo, H. 157, 170
McFarlane, I. G. 246, 262
McGarrahan, J. F. 231, 241
McKusick, V. A. 299, 304
McNaughton, G. A. L. 121–131
Mealing, F. 135, 136, 137, 141
Meek, J. 138, 142
Mehard, W. B. 251, 263
Mehlman, M. A. 107
Mehta, P. P. 310, 326
Meier, K. E. 67, 73
Meisner, H. M. 102, 107
Mekalanos, J. J. 351, 355

Meldolesi, J. 166, 171, 342, 354
Melik-Nubarov, N. S. 337, 353
Meller, L. 168, 171
Melnik, E. I. 340, 354
Meloen, R. H. 384, 386, 392
Merida, I. 109, 115, 116
Merlevede, W. 265–285, 306, 307, 308, 309, 324, 325, 326
Merrill, A. H. 164, 171
Merrill, D. K. 15, 17, 18, 23, 31
Merrill, Jr, A. H. 165, 167, 171
Merryfield, M. L. 246, 261
Mersel, H. 156, 157, 168, 170
Meshkova, N. P. 182, 193
Metzler, D. E. 207, 212
Meusburger, H. 63, 65, 72
Meyer, R. A. 226, 227, 230
Meyers, M. B. 358, 360, 372
Midden, W. R. 187, 194
Midwood, C. J. 218, 219, 223, 229
Mieskes, G. 267, 277, 278, 283
Milburn, M. V. 77, 79, 80, 81, 83, 85, 86
Milhausen, M. 209, 212
Miller, D. J. 180, 193
Miller, D. L. 81, 82, 83, 86, 87
Miller, J. 382, 392
Miller, R. H. 245, 246, 251, 261, 262
Miller, R. T. 77, 78, 81, 82, 85, 86
Mills, G. B. 343, 346, 354
Milyatani, S. 276, 280, 286
Mines, L. S. 3, 11
Minshull, J. 280, 285
Minskoff, S. A. 4, 11
Mitchell, D. 220, 230
Mitsuhashi, T. 66, 67, 73
Miura, K. 77, 79, 80, 81, 83, 85, 346, 354
Miwa, I. 209, 213
Miyazawa, T. 388, 392
Mohr, U. 230
Mojena, M. 312, 327
Monaghan, P. 219, 221, 223
Monahan, J. E. 91, 93, 102, 106, 107
Montejano, Y. D. 5, 6, 11
Montgomery, J. A. 11
Montic, T. C. 352
Moolenarr, W. H. 63, 65, 67, 68, 71
Mooney, R. A. 311, 312, 326
Moore, E. C. 47, 56, 58, 59
Moore, M. 334, 353
Moras, D. 197, 209, 211
Moreno, S. 280, 284
Morgan, W. 133, 134, 136, 140
Morgan, H. E. 245, 260
Morita, K. 392
Morita, T. 378, 391
Morjana, N. A. 195, 197, 206, 209, 211
Morla, A. O. 280, 284
Morozov, G. V. 337, 353
Morris, H. P. 47, 56, 58, 155, 169, 227, 230, 231, 241, 378, 391
Morris, J. D. H. 67, 73
Morris, N. R. 276, 280, 285
Morris, P. G. 226, 227, 230
Morrison, D. 280, 284
Moscow, J. A. 357, 372
Moskaleva, E. Yu. 331, 341, 352
Moss, J. 145, 152
Moudgil, V. K. 140, 141
Muellener, D. 64, 65, 72
Mueller, T. J. 360, 372
Muller, R. 159, 170
Mulner, O. 279, 284
Multhaup, G. 382, 392
Mumby, M. 307, 325
Mumby, S. M. 78, 86
Munnich, A. 101, 107
Muraishi, K. 231, 240, 241
Murphree, S. 47, 56, 58
Murray, A. W. 280, 285
Murthy, U. 148, 153
Mvumbi, L. 305, 309, 310, 319, 324, 326

Nagae, H. 246, 247, 250, 251, 253, 262
Nagai, K. 181, 189, 193, 194
Nagai, M. 35–45
Nagao, S. 346, 354
Nagarkatti, S. 81, 86
Nagradova, N. K. 182, 193
Nairn, A. C. 342, 349, 354, 355
Nakamura, A. 67, 73
Nakamura, T. 102, 107
Nakanishi, A. 392
Nakanishi, S. 100, 106
Nakayasu, M. 267, 283
Nametkin, S. N. 337, 353
Narkewicz, M. 91–108
Nash, C. R. 81, 86
Natapov, P. G. 333, 349, 355
Natsumeda, Y. 27, 31, 35–41, 56, 59
Naylor, S. L. 145, 152
Neal, S. E. 77, 85
Neef, V. 4, 11
Negrini, M. 147, 152
Nelson, K. 102, 107
Nemani, R. 266, 282
Nemer, M. O. 17, 21, 31
Nepokroeff, C. M. 100, 106
Neri, L. M. 157, 171
Neuhaus, F. C. 17, 21, 31
Neupert, W. 298, 304
Neurath, H. 378, 391
Neve, R. L. 382, 392
Neville, A. 219, 221, 229

Newman, J. D. 308, 325
Newport, J. W. 277, 280, 284
Newsholme, E. A. 14, 22, 23, 25, 28, 29, 30, 31, 32
Ng, T. C. 220, 221, 227, 228, 230
Nicander, B. 47, 48, 56, 57, 59
Nichols, C. R. 35, 36, 42, 45
Nicholson, D. W. 298, 304
Nicklen, S. 247, 262, 291, 303
Nicolini, C. 171
Nielsen, T. H. 121, 130
Nightingale, M. 145, 152
Nimmo, G. A. 121–131
Nimmo, H. G. 109, 117, 121–131
Nishimura, C. 197, 206, 211
Nishimura, S. 77, 79, 80, 81, 83, 85, 86
Nishizuka, T. 346, 354
Nishizuka, Y. 65, 72, 135, 138, 141, 158, 164, 170
Nitecki, D. 146, 152
Nodzenski, E. 57, 59
Noguchi, S. 77, 79, 80, 81, 83, 85, 86, 388, 392
Nolan, C. 107, 212
Noltmann, E. A. 205, 212
Nomoto, H. 65, 72
Nose, K. 63, 65, 66, 72
Noskov, A. N. 338, 353
Noskova, V. P. 338, 354
Notermans, S. 331, 352
Novick, R. P. 351, 355
Novokhatsky, A. S. 338, 353
Nowell, P. C. 145, 147, 151
Noyes, C. M. 205, 207, 208, 212
Nozawa, Y. 346, 354
Numa, S. 100, 106
Numez, J. 282
Nunally, R. L. 227, 230
Nurse, P. 280, 284, 285
Nutter, L. M. 56,59
Nyborg, J. 77, 79, 80, 82, 83, 85

O'Dowd, J. 176
O'Dowd, J. J. 180, 193
O'Keefe, E. J. 135, 141
Oberdorfer, F. 231–242
Oberhuber, H. 63–74
Obidin, A. B. 183, 193
Odessey, R. 245, 261
Ogawa, H. 202, 209, 211
Ognibene, A. 156, 157, 158, 159, 160, 163, 164, 166, 168, 170, 171
Ohkura, H. 276, 280, 285
Ohmori, T. 145, 150, 152
Ohtsuka, E. 77, 79, 80, 81, 83, 85, 86
Oka, M. 392
Okomura, H. 181, 193
Okuda, J. 209, 213
Olah, E. 35, 36, 39, 42, 43, 45
Olsgaard, R. B. 207, 212
Omar, A. 206, 213
Omote, Y. 208, 212
Ono, H. 289, 290, 291, 292, 293, 296, 303
Oppenheimer, J. H. 91, 100, 105
Ortanderl, F. 199, 211
Ostertag, H. 231–242
Ostrowski, J. 67, 73
Oswald, A. S. 109, 115, 117
Ottaviano, Y. 168, 172
Oudet, P. 291, 303
Ovcharenko, A. V. 337, 353
Ove, P. 155, 169
Owellen, R. J. 361, 373
Ozawa, T. 247, 254, 255, 262, 263
Ozon, R. 267, 268, 270, 272, 274, 277, 278, 279, 283, 284

Pace, A. M. 83, 84, 87
Paech, C. 207, 212
Page, M. A. 227, 230
Palfrey, H. G. 342, 354
Pallas, D. 134, 141
Pallas, D. C. 133, 134, 135, 136, 140, 141
Pallen, C. 268, 269, 278, 283
Pallen, C. J. 266, 267, 282, 306, 307, 324
Palmer, J. L. 109, 112, 113, 117
Pan, B. -T. 83, 87
Pandiella-Alonso, A. 342, 354
Pannocchia, A. 68, 73
Pansini, A. 311, 312, 326
Panten, U. 245, 260
Papa, S. 157, 171
Papageorge, A. G. 148, 150, 152
Papas, T. S. 39, 45
Pape, M. E. 91, 93, 100, 106
Pappone, M. C. 84, 87
Parada, L. F. 39, 45, 137, 141
Pardee, A. B. 47, 56, 59, 157, 170
Paris, H. 266, 282
Paris, S. 70, 74
Parker, P. 268, 269, 278, 283
Parker, P. J. 266, 267, 282, 306, 307, 309, 324, 326
Parmeggiani, A. 87
Parnes, J. R. 291, 293, 294, 303
Parsons, S. J. 137, 138, 142
Partridge, R. 311, 312, 326
Pascal, G. 91, 106
Passamani, E. 47, 56, 58
Passonneau, J. V. 199, 211
Pastan, I. 357, 358, 372
Patel, H. 252, 253, 263

Patel, M. S. 102, 107
Paterson, W. F. 67, 73
Patrick, J. 168, 172
Paulik, E. 35–45
Paulauskis, J. D. 100, 106
Pausch, J. 231, 239, 240, 241, 242
Pawar, S. 134, 138, 140
Pawlowsky, J. 109, 116
Paxton, R. 245, 246, 247, 249, 250, 251, 252, 253, 254, 255, 257, 261, 262, 263
Pearce, H. L. 357–373
Pegorier, J. P. 91, 105
Pelech, S. 307, 308, 309, 325
Pelham, H. R. B. 291, 294, 303
Penefsky, H. S. 200, 211
Pennington, K. 35, 42, 45
Perdereau, D. 91–108
Perez-Castillo, A. 91, 100, 105
Perlman, R. L. 349, 355
Perlmutter, R. M. 134, 138, 140
Pescarmona, G. 68, 73
Peter-Riesch, B. 345, 354
Peterson, O. H. 345, 354
Pettit, F. H. 246, 261
Pettit, G. R. 157, 171
Pfanner, N. 298, 304
Pfister, C. 77, 85
Pfleiderer, G. 199, 211
Picard, A. 280, 284
Pick, E. 346, 354
Pierce, M. W. 109, 112, 117
Pillay, D. 91, 100, 101, 105
Pillwein, K. 56, 59
Pindel, E. V. 184, 185, 193
Pinna, L. A. 269, 283
Pirce, M. W. 109, 112, 113, 117
Piwnica-Worms, H. 134, 140, 280, 284
Pledger, W. J. 133, 135, 140, 141
Poenie, N. 64, 72
Pogson, C. I. 16, 17, 23, 27, 31, 32
Pointer, R. H. 109, 112, 113, 117
Poller, K. 175, 192
Ponte, P. 382, 392
Pope, L. E. 3–12
Port, R. E. 233, 242
Porteous, J. W. 15, 16, 19, 23, 31
Porter, J. W. 91, 93, 100, 102, 106
Posch, L. 63, 65, 66, 72
Poser, W. 245, 260
Posypanova, G. A. 340, 354
Potter, R. L. 110, 117
Pottgiesser, J. 382, 392
Pouysségur, J. 70, 74, 168, 172
Powell, S. M. 245, 246, 247, 249, 250, 251, 253, 254, 261, 262
Pozzan, T. 166, 171, 345, 354
Prajda, N. 35, 39, 42, 45
Praybyla, A. E. 248, 263
Price, E. M. 3, 11
Prilipko, L. L. 189, 194
Printz, R. L. 103, 108
Prozialeck, W. C. 358, 370, 372
Prystowsky, M. B. 344, 354
Puerta, J. 109–117
Puzas, J. E. 266, 281

Queiroz, O. 123, 125, 130

Radda, G. 218, 229
Rader, J. I. 4, 11
Rahmsdorf, H. J. 138, 142
Rakowicz-Sulczynsica, E. M. 164, 171
Rall, T. 78, 86
Ramachandran, J. 78, 86
Ramakrishna, S. 109, 117
Ramanathan, L. 291, 293, 294, 303
Randall, D. D. 121, 129
Randall, R. J. 159, 171
Randerath, E. 111, 112, 117
Randerath, K. 111, 112, 117
Randle, P. J. 245, 246, 251, 252, 253, 261, 262, 263
Ranjeva, R. 127, 131
Rank, J. L. 14, 22, 30
Rao, P. N. 284
Rapoport, T. A. 15, 16, 20, 31
Rapp, B. J. 121, 129
Raptis, L. 133–142
Rasenack, J. 240, 242
Reardon, M. A. 56, 59
Reddy, C. C. 195, 196, 211
Reddy, E. P. 39, 45, 133, 134, 140
Reddy, G. P. V. 47, 56, 59
Redendo, J. M. 67, 73
Redkozubov, A. 345, 354
Redman, R. S. 91, 106
Reed, J. C. 145, 147, 151
Reed, L. J. 246, 261, 262
Reep, B. R. 146, 147, 152
Reichard, P. 47, 48, 56, 57, 58, 59
Reiffen, K. A. 231, 232, 234, 239, 240, 241
Remy, C. 227, 230
Renold, A. E. 103, 107
Resink, T. J. 123, 127, 130
Rettenmier, C. W. 265, 281
Reutter, W. G. 231, 241
Rey, D. A. 47–59
Rhodes, C. 291, 303
Riches, D. 24, 28, 31
Richmond, W. B. 251, 263
Rieutort, M. 92, 106

Rigby, P. W. J. 291, 303
Rink, T. J. 70, 73
Riondel, J. 227, 230
Riordan, J. R. 357, 372
Rixon, R. H. 47, 56, 58
Rizzoli, R. 156, 157, 170
Roach, P. J. 305, 324
Robbins, R. 331, 352
Roberts, T. 134, 141, 280, 284
Roberts, T. M. 133, 134, 135, 136, 140, 141
Robins, D. J. 180, 193
Robins, R. K. 35, 45
Robishaw, J. D. 78, 81, 85, 86
Rock, M. K. 199, 211
Rodeck, U. 164, 171
Rodrigues, L. M. 217–230
Rodriguez-Boulan, E. 115, 117
Rofstad, E. K. 221, 227, 230
Rogers, A. E. 220, 230
Rogol, A. 115, 117
Romeo, G. 339, 354
Romero, G. 115, 117
Roncari, D. A. K. 91, 100, 105
Rondeau, J. M. 197, 209, 211
Roos, D. 14, 30
Rose, H. G. 155, 156, 157, 169
Rosebrough, N. J. 159, 171
Rosen, O. M. 109, 112, 116, 117
Rosowsky, A. 5, 11
Ross, B. D. 226, 227, 228, 230
Ross, W. 357, 372
Rossi Fanelli, A. 212
Rothbard, J. 267, 282
Rothstein, A. 70, 73
Rotin, D. 63, 65, 67, 68, 71
Rougraff, P. 245–263
Roussel, M. F. 265, 281
Rozengurt, E. 67, 72, 157, 170
Rubin, C. S. 109, 112, 117
Rubin, E. H. 47, 56, 58
Ruddle, F. H. 299, 304
Rudland, P. 219, 221, 229
Rüegg, J. C. 267, 277, 278, 283
Ruiz-Albusac, J. M. 109, 115, 116
Ruskin, B. 291, 303
Russ Price, S. 145, 152
Russell, A. 4, 11
Russell, D. S. 109, 116
Russell, D. W. 78, 86
Russell, P. 280, 285
Russo, I. H. 220, 230
Russo, J. 220, 230
Rustum, Y. M. 48, 59
Rutter, W. J. 248, 263
Ryabukhin, I. A. 337, 353
Ryazanov, A. G. 333, 349, 355
Sabath, D. E. 344, 354
Sabue, K. 176
Sacca, R. 265, 281
Sack, J. 101, 107
Safa, A. R. 358, 360, 362, 372, 373
Sakaguchi, A. Y. 145, 152
Sakiyama, S. 388, 392
Sakuri, Y. 358, 372
Salhanick, A. I. 311, 312, 326
Salmons, B. 64, 65, 72
Salomon, M. R. 78, 82, 86, 87
Salter, M. 16, 17, 23, 31
Saltiel, A. R. 107, 109, 115, 116, 117
Salvatore, A. M. 339, 354
Samama, B. 197, 209, 211
Samama, J. P. 197, 209, 211
Sambrook, J. 36, 45
Sampathkumar, S. 266, 268, 282
Sanada, Y. 378, 391
Sanchez, A. 70, 73, 83, 87
Sanders, L. E. 258, 263
Sanger, F. 247, 262, 291, 303
Saperstein, R. 311, 312, 326
Sasaki, Y. 165, 167, 171
Sato, M. 289–313
Sato, T. 240, 242
Saunders, K. B. 134, 140
Sauro, H. M. 15, 18, 19, 20, 31
Sawamura, M. 135, 138, 141
Sazaki, K. 102, 107
Schaber, M. D. 80, 81, 86
Schade, S. 205, 211
Schaeffer, H. J. 48, 59
Schaffers, I. M. 331, 353
Schaffhausen, B. 133, 134, 136, 140
Schaffhausen, B. S. 134, 135, 141
Schantz, E. J. 351, 355
Schauder, P. 245, 261
Schautz, E. J. 331, 352
Scheid, P. 71, 68, 73
Schelling, D. 307, 308, 309, 324, 325
Schepens, J. T. G. 246, 262
Scherer, N. 76, 85
Scherrer, K. 93, 106
Scheuer, P. J. 277, 284
Schidzielorz, A. 182, 193
Schilling, J. 382, 392
Schilling, J. W. 388, 392
Schimke, R. T. 4, 9, 11, 357, 372
Schlegel, R. A. 284
Schlessinger, T. 265, 281
Schlichter, L. 333, 343, 353
Schmidt, G. 48, 59
Schmitz, F. J. 277, 284
Schnackerz, K. D. 205, 212
Schneider, F. 231, 232, 234, 239, 240, 241
Schonborn, J. 245, 260

Schonwalder, H. 331, 352
Schröter, E. 232, 241
Schultz, G. 333, 353
Schulz-Holstege, C. 231, 232, 233, 234, 239, 240, 241
Schwartz, C. F. W. 109, 115
Schwartz, H. L. 91, 100, 105
Schwartz, L. B. 378, 391
Schwartz, R. T. 135, 136, 137, 141
Schwender, C. F. 48, 59
Schwoch, G. 168, 171
Scolnick, E. M. 80, 83, 86
Scrace, C. 265, 281
Scriver, C. R. 256, 263
Sefton, B. M. 265, 281
Seidman, J. G. 291, 293, 294, 303
Semba, K. 134, 140
Sen Majumdar, A. 148, 153
Sener, A. 245, 261
Serunian, L. A. 135, 141
Seslavina, L. S. 189, 194
Severin, E. S. 331–355
Severin, F. F. 333, 349, 355
Severin, S. E. 175–194
Shahed, A. R. 310, 326
Shakhparonov, M. I. 348, 355
Shalda, A. M. 133, 134, 140
Shalloway, D. 134, 140
Shaper, J. H. 147, 152
Shen, T. Y. 109, 115, 117
Shenberg, E. 331, 353
Sherr, C. J. 265, 281
Shestakova, E. A. 333, 349, 355
Shih, T. Y. 80, 82, 83, 86, 87, 148, 150, 152
Shimanaka, S. 190, 194
Shimomura, Y. 245–263
Shinohara, T. 197, 206, 211
Shiojiri, S. 382, 385, 392
Shu-Yui, Y. 182, 193
Shur, S. A. 182, 193
Shuttelwood, R. 220, 229
Shvachkin, Yu. P. 185, 194
Shvetz, V. I. 348, 354
Sidell, N. 333, 343, 353
Sies, H. 31
Siffert, G. 68, 71, 73
Siffert, W. 68, 71, 73
Sigal, I. S. 80, 81, 83, 86
Sikorska, M. S. 57, 59
Silberman, S. R. 266, 282
Silini, E. 147, 152
Sim, A. T. R. 255, 263, 308, 309, 325
Simanis, V. 280, 285
Simms, G. 382, 392
Simon, M. I. 81, 86, 87
Simpson, A. W. M. 70, 73
Singer, S. J. 265, 281
Sinnett-Smith, J. 157, 170
Sirotnak, F. M. 3, 5, 11
Sjogren, H. O. 331, 333, 334, 352, 353
Skog, S. 47, 56, 58, 59
Skolysheva, L. K. 182, 193
Skryabin, G. A. 189, 194
Skulachev, V. P. 182, 193
Slater, E. E. 311, 312, 326
Slaton, J. 322, 327
Small, J. R. 15, 19, 20, 31
Smeal, T. 138, 142
Smigel, M. D. 78, 86
Smirnov, V. V. 331, 341, 352
Smit, L. 384, 386, 392
Smith, A. E. 134, 140
Smith, C. D. 157, 171
Smith, C. M. 182, 193
Smith, D. F. 231, 232, 239, 241
Smith, J. A. C. 123, 130
Smith, L. L. 67, 73
Smith, S. 91, 100, 105
Smith, T. J. 378, 381, 391
Snell, E. E. 207, 212
Snell, K. 13–32
Sneyd, J. G. T. 316, 327
Snider, R. D. 246, 262
Sober, H. A. 198, 211
Socher, S. H. 80, 83, 86
Sokatch, J. R. 258, 263
Solomon, M. 246, 251, 262
Soltoff, S. P. 135, 141
Sorbera-Cazan, L. R. 109, 116
Southern, E. M. 291, 303
Spada, A. 83, 84, 87
Sparks, C. E. 311, 312, 326
Sparks, J. D. 311, 312, 326
Spector, A. A. 156, 169
Speth, M. 266, 282
Spirin, A. S. 333, 349, 355
Spizizen, J. 333, 353
Sprangler, M. 155, 169
Srere, P. A. 109, 112, 117
Srivastava, P. C. 35, 45
Staehelin, T. 147, 152
Stalmans, W. 305–327
Stanley, E. R. 265, 281
Stanton, G. I. 333, 353
Stanton, T. H. 67, 73
Staquet, S. 275, 277, 283, 284
Stark, G. R. 207, 212
Stein, B. 138, 142
Stepp, L. R. 246, 255
Stern, D. F. 265, 281
Stevens, A. N. 218, 219, 223, 226, 227, 229, 230
Stevens, V. L. 164, 171
Stewart, A. A. 308, 325

Still, W. C. 360, 373
Stinson, R. A. 266, 281
Stock, A. 199, 211
Stockwell, P. 265, 281
Stokes, P. E. 148, 150, 152
Storey, J. M. 100, 107
Strålfors, P. 109, 110, 111, 112, 115, 116, 123, 127, 130, 322, 327
Stroud, R. M. 77, 78, 79, 85
Strout, H. V. 311, 312, 326
Strubin, M. 298, 299, 304
Stryer, L. 76, 84, 85, 87
Stubblefield, E. 56, 47, 58
Stubbs, M. 217–230
Suda, T. 181, 193
Sudol, M. 134, 140
Suganuma, M. 267, 283
Sugar, J. 36, 39, 42, 43, 45
Sugiyama, T. 123, 130
Sugumura, T. 267, 283
Suguri, H. 267, 283
Sukhikh, G. T. 189, 194
Sul, H. S. 100, 106
Sullivan, K. A. 78, 81, 82, 86
Sutherland, R. M. 221, 227, 230
Suttle, D. P. 360, 372
Suzuki, K. 378, 382, 391
Suzuki, M. 254, 255, 263
Suzuki, T. 289–313
Sveshnikov, P. G. 337, 353
Swan, J. S. 195, 196, 211
Sweney, L. R. 91, 106
Swergold, S. D. 109, 112, 117
Szelenyi, J. 36, 39, 42, 43, 45
Szondy, Z. 25, 31

Tachibana, K. 277, 284
Tada, M. 231, 240, 241, 242
Tager, J. M. 15, 16, 17, 18, 31
Takahashi, I. 65, 72
Takahashi, T. 231, 240, 241, 242
Takahashi,Y. 382, 385, 392
Takai, A. 267, 277, 278, 283
Takai, Y. 135, 138, 141, 145, 150, 152
Takatsuki, K. 384, 392
Takeda, E. 47, 56, 58
Takenawa, T. 63, 65, 66, 72
Talwar, H. S. 156, 157, 167, 170
Tam, M. F. 150, 152
Tamaki, N. 181, 193
Tamaoki, T. 65, 72
Tamura, S. 308, 311, 325, 326
Tanaka, T. 392
Tang, G. 109, 115, 117
Tanzer, L. R. 360, 372
Tanzi, R. 382, 392
Tao, S. -H. 307, 325
Taparowsky, E. J. 63, 65, 66, 72
Tarentino, A. L. 231, 241
Tata, J. R. 156, 169
Tavitian, A. 145, 152
Taylor, C. B. 91, 100, 105
Temeles, G. L. 80, 83, 86
Teplow, D. B. 81, 86
Teranishi, Y. 145, 152
Tew, K. D. 357, 372
Thannhauser, S. J. 48, 59
Thayer, R. E. 291, 303
Thelander, L. 47, 56, 58, 59
Thibier, C. 279, 284
Thirup, S. 77, 79, 80, 82, 83, 85
Thoenen, H. 339, 354
Thomas, A. P. 322, 327
Thomas, P. 291, 303
Thomas, P. S. 93, 106
Thomas, T. P. 156, 157, 167, 170
Thompson, R. C. 77, 85
Thorner, J. 276, 280, 284
Tilgham, S. M. 102, 107
Timple, O. 175, 192
Tischler, M. E. 245, 260
Titanji, P. V. K. 182, 193
Toda, T. 276, 280, 285
Tokushima, T. 382, 385, 392
Tolbert, N. E. 207, 212
Tolkachevskaya, N. F. 175, 176, 192
Tolley, E. 299, 304
Tolman, E. L. 311, 312, 326
Tomita, F. 65, 72
Tomkins, G. M. 78, 86
Tong, L. 77, 79, 80, 81, 83, 85, 86
Tonks, N. K. 266, 274, 280, 281
Toper, R. 346, 354
Torchilin, V. P. 337, 353
Toro, M. J. 76, 85
Toth, B. 305–327
Totty, N. 265, 281
Touchot, N. 145, 152
Towbin, H. 147, 152
Towle, H. C. 101, 107
Toyoshima, K. 134, 140
Trachuk, V. A. 182, 193
Trahey, M. 77, 81, 85
Trautwein, W. 267, 277, 278, 283
Traving, B. -C. 232, 241
Trent, J. M. 360, 372
Treves, S. 68, 73
Tribukait, B. 47, 56, 58, 59
Tricot, G. J. 32, 35, 36, 38, 39, 42, 45
Tronick, S. R. 39, 45
Tropschug, M. 298, 304
Tsai, C. S. 210, 213
Tsai, S. -U. 145, 152

Tsien, R. Y. 64, 72
Tsuiki, S. 308, 325
Tsuji, J. M. 3, 11
Tsujimoto, Y. 145, 147, 148, 149, 150, 151, 152
Tsukagoshi, S. 358, 372
Tsukitani, Y. 277, 284, 308, 309, 325
Tsuruo, T. 357, 358, 372
Tu, C. P. D. 150, 152
Tuboi, S. 289–313
Turner, A. J. 195, 210
Turner, M. K. 47, 57, 58
Turosov, V. 230
Turrini, F. 68, 73
Tzagoloff, A. 298, 303

Überall, F. 63–74
Ucla, C. 91, 92, 93, 103, 106
Udenfried, S. 176
Ullrich, A. 265, 281
Usdin, E. 212

Vagelos, P. R. 91, 100, 105, 106
Vallar, L. 83, 84, 87
Vallee, B L. 208, 212
Van de Werve, G. 305, 312, 322, 324, 327
Van Der Meer, R. 17, 18
Van Engen, D. 277, 284
Van Lint, J. 275, 283
Van Zwieten, M. J. 220, 230
Vandenheede, J. R. 275, 283, 307, 308, 309, 312, 325, 326
Vanstapel, F. 218, 219, 221, 229, 308, 325
Vara, F. 67, 72
Varela, I. 109, 115, 116
Vartanian, J. -P. 267, 282
Vaughan, M. 145, 152
Vaux, D. L. 151, 152
Vedvick, T. S. 64, 72
Veech, R. L. 227, 230
Veerkamp, J. H. 246, 262
Velan, B. 291, 293, 294, 303
Veldhuizen, J. A. M. 246, 262
Vereb, G. 317, 327
Vernon, R. G. 91, 100, 102, 105, 106
Vicario, P. P. 311, 312, 326
Vidal, J. 125, 127, 130, 131
Vila, V. 67, 73
Villa-Komaroff, L. 382, 392
Villalba, M. 109, 110, 116, 117
Vincendon, G. 156, 157, 168, 170
Vincentini, L. M. 342, 354
Viola Magni, M. P. 155, 169
Viola, M. V. 63, 72
Vitale, M. 157, 171
Vitols, K.-S. 312
Vogelstein, B. 93, 106
Volpe, J. J. 91, 100, 105, 106
Volpe, P. 166, 171
Von Holt, C. 246, 262
Von Wartburg, J. P. 205, 206, 212, 213
Vulfson, P. L. 182, 193

Wachter, E. 298, 304
Waelkens, E. 267, 269, 279, 282, 283, 306, 307, 308, 309, 324, 325, 326
Wagenmakers, A. J. M. 246, 262
Wagner, P. 145, 152
Wakamatsu, M. O. K. 267, 283
Wakelam, M. J. O. 102, 107
Walker, B. 29, 32
Walker, D. G. 91, 100, 102, 105, 106, 107
Walker, J. E. 246, 255, 261
Walker, J. M. 166, 171
Walker, P. R. 57, 59
Wallace, W. 382, 392
Wallf, A. V. 384, 386, 392
Walser, M. 260
Walsh, C. 207, 212
Walsh, K. 266, 274, 281
Walsh, K. A. 266, 280, 281
Walter, M. 83, 87
Walton, G. W. 64, 72
Wanders, R. J. A. 15, 16, 17, 18, 20, 22, 31
Wang, J. Y. J. 280, 284
Wang, L. H. 134, 140
Wang, T. 14, 30
Wappner, R. S. 257
Warburg, O. 14, 30
Washington, F. M. 17, 21, 31
Waterfield, M. D. 265, 268, 269, 278, 281, 283
Watts, C. 316, 327
Watts, T. D. 115, 117
Webb, J. R. 91, 100, 105
Webb, M. R. 77, 85
Weber, G. 27, 31, 32, 35–45, 47, 56, 58, 59, 227, 230, 231, 239, 240, 241
Weckbecker, G. 231, 232, 233, 239, 240, 241, 242
Wedding, R. T. 125, 130
Weeks, M. O. 148, 150, 152
Weiblum, B. 333, 353
Weidemann, M. J. 14, 22, 30
Weinberg, R. A. 39, 45, 137, 141, 265, 281
Weiner, H. 210, 211, 213
Weiner, N. 212
Weinstein, I. B. 137, 141
Wells, W. W. 157, 171

Wermuth, B. 197, 205, 206, 210, 211, 212, 213
Westerhoff, H. V. 10, 16, 17, 18, 22, 25, 31
Westermark, B. 135, 141
Westin, E. 39, 45
Weyman, C. M. 63, 65, 66, 72
Whang-Peng, J. 150, 152
Whipple, J. H. 311, 326
White, J. H. 210, 213
White, M. 134, 135, 141
White, M. F. 111, 117
Whitehead, M. V. 11
Whiteley, J. M. 4, 11
Whitfield, J. F. 47, 56, 57, 58, 59, 133–142
Whitman, M. 134, 135, 141
Whitton, P. D. 312, 327
Wilkins, M. B. 121–131
Wilkinson, D. S. 48, 59
Williams, J. C. 219, 221, 229, 231, 239, 240, 241
Williams, M. 121, 129
Williamson, D. H. 29, 32, 227, 230
Williamson, J. R. 260, 322, 327
Williamson, K. C. 145, 152
Willner, T. Z. 331, 353
Winter, K. 123, 130
Winter, M. A. 357–373
Wise, E. M. 17, 21, 31
Wistow, G. 197, 206, 211
Witters, L. A. 109, 115, 117
Wohlheuter, R. M. 246, 247, 262
Wolanski, B. S. 80, 83, 86
Wolf, D. A. 245, 258, 260
Wolf, M. 206, 213
Wolfman, H. 63, 65, 66, 72
Wolfson, M. W. 63, 65, 66, 72
Wollheim, C. B. 345, 354
Wollney, E. 127
Wolverton, J. S. 360, 372
Wong, C. W. 382, 391
Wong, E. H. 109, 116
Wong, G. 146, 152
Wong, G. G. 218, 229
Wong-Staal, F. 39, 45
Wood, E. A. 91, 93, 102, 106
Wood, J. G. 156, 164, 170, 171
Wood, M. R. G. 179, 193
Woodbury, R. G. 378, 391
Work, T. S. 211
Wu, M. 298, 303
Wu, M. X. 125, 130

Yamada, K. 35, 38, 39, 40, 41, 45, 240, 242, 267, 283
Yamada, Y. 36, 40, 41, 45
Yamaguchi, K. 231, 240, 241, 242
Yamaji, Y. 35–45
Yamamoto, K. 145, 150, 152
Yamamoto, R. T. 129, 131
Yamamoto, T. 134, 140
Yamamoto, Y. 183, 193
Yamanishi, T. 289, 290, 303
Yamaoka, K. 138, 139, 142
Yan, C. 91, 93, 100, 102, 106
Yanagida, M. 276, 280, 285
Yang, C. -H. 3, 11
Yang, H. C. 157, 170
Yang, S. D. 275, 283, 307, 325
Yankovsky, N. K. 333, 351, 353
Yarden, Y. 265, 281
Yasogawa, N. 378, 391
Yatani, A. 76, 85
Yates, A. J. 345, 354
Yeaman, S. J. 246, 251, 255, 261, 262, 263, 361
Yockey, W. 176
Yokogoshi, Y. 381, 384, 391
Yokoyama, S. 388, 392
Yoo-Warren, H. 91, 93, 102, 105, 107
Yoshida, T. 289, 313
Yoshimoto, K. K. 81, 87
Yoshimura, N. 289, 291, 293, 296, 303
Yoshioka, S. 240, 242
Yoshisawa, S. 267, 283
Youdale, T. 47, 56, 58
Youdim, M. B. H. 212
Young, R. A. 149, 153, 291, 303
Yu, C. -S. 5, 11

Zammit, V. A. 307, 308, 309, 325
Zamora, J. M. 262, 358, 361, 372, 373
Zavoico, G. B. 68, 70, 73
Zeller, K. 109, 115, 117
Zevely, E. M. 3, 6, 10, 11
Zhang, B. 245–263
Zhao, Y. 245–263
Zhen, W. 35–45
Zhen, Y. -S. 56, 59
Zhuang, X. Y. 70, 74
Ziegler, S. 233, 242
Ziegler, S. F. 134, 138, 140
Zinn, A. B. 299, 304
Zopf, R. 109, 110, 116,
Zschaler, R. 331, 353

SUBJECT INDEX

N-Acetylanserine
  localization 176
  metabolism 179
N-Acetylcarnosine
  localization 176
  metabolism 179
Acetyl-CoA carboxylase (EC 6.4.1.2)
  cDNA probe 93, 103
  in rat liver
    activity
      after weaning onto high-carbohydrate diet 94, 95, 97, 104
      after weaning onto high-fat diet 97, 100, 104
    at suckling–weaning transition 91, 99, 100
    in adults 100
    mRNA
      after carbohydrate-feeding sucklings 98, 99, 101
      after weaning onto high-carbohydrate diet 94–97, 104
      after weaning onto high-fat diet 97, 100, 104
N-Acetylhistidine localization 176
N-Acetylhomocarnosine localization 176
Actinia histidine in muscle 177
[^{14}C]Adenosine
  metabolism in L1210 cells 48
    araC on 49, 50, 54
    conversion to dNTPs 51
    hydroxyurea on 49, 50, 54
  separation from deoxyadenosine 55
Adenylate cyclase (adenylyl cyclase, EC 4.6.1.1)
  activation in mutant S49 cells 78, 81
    mutational effects 82
    receptor-dependent 340
  activity
    BacM on 348
    calmodulin on 348, 349
    in SEA-treated Jurkat cells 341, 348
  assay 332
  $G_s\alpha$ chain on stimulation 75
  in SEA second-messenger interactions 346, 347
  POS inhibition 109, 115
Adenylate kinase (EC 2.7.4.3)
  antibodies 291
  mRNA translation 300
ADP
  ALR2 kinetic constant 203, 208
  fraction, free in tumors and normal tissues 227, 228
ADP-ribose receptor, absence from bcl-2α 150, 151
Agar growth
  of polyoma-transformed 3T3 cells 138
  response of cells to MTAg induction 136
  stimulation by conditioned media (SAGF) 138, 139
AIDS virus *see* HIV-1
β-Alanine in muscle tissue of animals 177
  metabolism 179
β-Alanylhistidine *see* Carnosine
β-Alanyl-1-*N*-methylhistidine *see* Anserine
Aldehyde reductase (ALR1, EC 1.1.1.2)
  multifunctional role 195
  of human liver, sequence comparison with ALR2 206, 209, 210
  primary role 195
  probable physiological roles 196
Aldose reductase (aldehyde reductase 2, ALR2, EC 1.1.1.21) 195–210
  activation
    by various agents 200, 201, 210
    protecting agents 202, 203, 208
  amino acid sequence determinations 197
  assay 198
  chemical modification 198, 207, 209, 210
  in diabetic complications 195, 209
  inhibition constants 199
  inhibitors 196, 209
  isolation 198
  multifunctional role 195
  primary role 195
  probable physiological roles 196
  reaction with pyridoxal-P
    concentration dependence 201, 205
    derivative formed 202–205
    endoproteinase lysine C digest 205, 206

pH dependence 202
modified lysine residue 198, 206, 207, 209, 210
noncovalent complex 207, 208
stoichiometry of 205, 208, 210
sequence homologies 206, 210
Alkaline phosphatase (EC 3.1.3.1)
cell surface attachment 115
in dGalF-1-P determination 232
Allopurinol
on plasma hypoxanthine concentration 35, 37, 38
with tiazofurin in leukemic patients 36
Alzheimer amyloid precursor proteins
A4-inhibitor 382, 385
domain antibody 396
K_i for various proteases 384, 385
gene expression of 382, 383, 385
localization
in chromaffin cells 388, 390
in pyrimidal neuron 388–390
Alzheimer disease
increase in A4-inhibitor in 386
initial plaque formation hypothesis 389–391
pathogenesis 385
AMD phosphatase
activation 275
okadaic acid on 277, 278
Amino acid *see also* Branched chain amino acids
production and use, interorgan relations 28
sequence of G-proteins
GTP binding region 80
GTP conformational change region 81, 82
GTPase activity region 83
Aminosugars on SEA activity 338, 339
2′-AMP ALR2 kinetic constants 203
cAMP
concentration on cell proliferation 340, 341
in SEA-second messenger interactions 346, 347
levels
in SEA-treated Jurkat cells 341, 343
on Ca^{2+} concentration 343
cAMP-dependent protein kinase (EC 2.7.1.37) POS inhibition 109
cAMP phosphodiesterase (EC 3.1.4.17) POS stimulation 109, 115
Anserine (β-alanyl-l-*N*-methylhistidine)
as buffer 182
from carnosine 176–178
in muscle tissues of animals 177
localization 175, 176
on muscle function 178
synthesis during ontogenesis 176, 177
Antigen stimulation of B cells, signal transduction pathway and 145
Antioxidants in various tissues 186
Antipain inhibition of tryptase TL 381
α_1-Antitrypsin inhibition of tryptase TL 381
ATP-citrate lyase (EC 4.1.3.8)
in rat liver
after weaning onto high-fat diet 100
at suckling–weaning transition 91
diabetes on 100
phosphopeptide isolation 110
phosphorylation 109–116
autophosphorylation 112, 113
in cell-free extracts 113, 114
EDTA on 114
POS on 114
insulin stimulation 111–113
POS stimulation 111–113
serine residue site 112, 113
properties 109
ATP-ribose ALR2 kinetic constant 203, 208
ATP stimulation of PCS PTPase activity 267–269
PTPA dependence on 273
ATPases histidine-containing dipeptides on 182
Autocrine growth factors
MTAg complexes, stimulation of 138
soft agar GF properties 139
Avian sarcoma virus $pp60^{v\text{-}src}$ protein correspondence with $pp60^{c\text{-}src}$ 134, 136

B-cell
nucleotide labeling 148
stimulation bc1-2 expression and cell proliferation 145, 147
Bacteriomodulin (BacM)
activation of calmodulin-dependent enzymes 349, 350, 352
disturbance of Ca^{2+} regulation 349, 350
formation by proteolysis of SEA 347–349
on adenylate cyclase activity 348, 350
on EF-2 kinase 349
BBI inhibition of tryptase TL 381
Benzoylyohimbine (BY) synthesis 363, 364
Bombesin
activation of quiescent cells 157

induced intracellular
alkalinization 66–70
inhibition of 66–69
on nuclear protein
phosphorylation 164–168
on polyphosphoinositide
labeling
in isolated nuclei 160, 163, 164
in whole cells 160–162
metabolism 157
Branched-chain amino acids
enzymic oxidation 245
α-ketoacids *see also* α-Ketoacid
dehydrogenase
complex 245–260
in rats in various nutritional
states 252
on dehydrogenase kinase
activity 252
regulation, physiological conditions
on 245, 259
Bryophyllum fedtschenkoi
CAM pathway in 122
PEPc
circadian rhythm in 124, 125
kinase activity 127
phosphatase, okadaic acid
sensitivity 128, 129

Ca^{2+}
concentration
cAMP levels on 343
in SEA-treated Jurkat cells 342
on cell proliferation 340–342
on K^+-channels 344
in SEA-second messenger
interactions 346, 347
regulation BacM disturbance of 349,
350
release from intracellular stores 63
assay 64
cytosolic pH and 69–71
depression of bombesin induced 69
Na^+/H^+-antiporter requirement 68
Calmodulin
-dependent protein kinases, BacM
activation 349
in SEA-second messenger
interactions 346, 347
on adenylate cyclase activity 348
Carboxypeptidase G_2 (CP-G_2) hydrolysis
of γ-F-MTX 6
Carcinine (β-alanylhistamine)
localization 176
metabolism 179
synthesis in crab 180
Carnosinase (EC 3.4.13.3)
localization 180
Carnosine (β-alanylhistidine)
antioxidative effect of 185, 192
pH dependence 186
synergism with α-tocopherol 186,
187
as buffer 182
chelating action 182
clinical applications 187–190
cataract 188
radioprotective action 189–191
wound healing 189, 192
conversion to anserine 177, 178
hydrophilicity 185, 186
in muscle tissues of animals 177
isomeric equivalence 181
localization 175, 176
metabolism in tissues 181–183
on biological membranes 183–187
on glycogen phosphorolysis 182
on lipid peroxidation 183, 184, 189
on muscle function 178, 179, 181
on PC-12 cells 189
superoxide anion affinity 187, 188
synthesis during ontogenesis 176,
177
transport 180
Carnosine synthetase (EC 6.3.2.11)
isolation 179
Cat histidine dipeptide in muscle 177
Catalase on superoxide anion
interaction 188
Cataract, diabetic ALR2
involvement 196
Cathepsin B
A4-inhibitor on 384
c-Ha-*ras* p21 on 389–391
Cathepsin H, c-Ha-*ras* p21 on 389–391
Cathepsin L, c-Ha-*ras* p21 inhibition
of 389–391
Cell cycle
MPF during 277, 280
regulation, polycation stimulated
PTPases and 266, 276–278, 280
variation of ribonucleotide reductase
activity 47
Cell membranes
function, histidine-containing dipeptides
and 183–187
stability, protective mechanism of
carnosine 189
Cell proliferation
dependence on K^+ channels 343
glycolysis rate and 14, 30
mechanism of blocking by SEA 350,
352

plasma serine concentrations and 29
second messenger functions 340, 341
Cellular *src* gene protein $pp60^{c\text{-}src}$
complex with MTAg and activation of PI kinase 134
consequences of signaling 136–139
regulatory mechanisms 135
Chemotherapy
carnosine 187–192
dGalF for hepatocellular carcinoma 240
diabetes 195–197
multidrug resistance 357–371
tiazofurin on human leukemia 35–44
Chicken, histidine dipeptide in muscle 177
stepwise synthesis 177, 178
α-Chloroisocaproate inhibition of branched-chain α-ketoacid dehydrogenase 246, 248–250, 254, 255
Chloroquine
binding to P-gp 358
calculated 3D structure 370, 371
MDR modulator 359
modulator index 362
molar refractivity 361
octanol–water partition 361
structure 359
Chlorpromazine
binding to P-gp 358
calculated 3D structure 370, 371
MDR modulator 359
modulator index 362
molar refractivity 361
octanol–water partition 361
structure 359
Cholera toxin (CT) site on G-proteins 79, 83, 84
Chromatin-associated phospholipids 157
variation with cell activity 156
Chymase *see also* Serine protease
A4-inhibitor on 384
inhibition by trypstatin 383
Chymostatin inhibition of tryptase TL 381
α-Chymotrypsin inhibition by A4-inhibitor 384
Circadian rhythm control of CAM PEPc phosphorylation 124
Clinical application of MRS 226
monitoring endocrine therapy 228
Concanavalin A (con A) prestimulation of PBL cells 335
Cow, Polled Hereford, model for maple syrup urine disease 256, 260
Crab
carcinine synthesis in 180
histidine in muscle 177
Crassula argenta PEPc forms 125
Crassulacean acid metabolism (CAM)
pathway in *B. fedtschenkoi* 122
PEPc phosphorylation 123–125
Creatine kinase (EC 2.7.3.2) equilibrium, free ADP calculation and 226, 227
Cystatin sequence homology with c-Ha-*ras* p21 389
[^{14}C]Cytidine metabolism in L1210 cells 48
araC on 49, 50, 53, 54
conversion to dNTPs 51–54
hydroxyurea on 49, 50, 53, 54
Cytoplasmic pH
determination 64
on Ca^{2+} release 69
Cytosine arabinoside (araC) on ribonucleoside metabolism 49–56
ADP reduction 54
CDP reduction 53
DNA synthesis 49–51, 53

Deoxyadenosine formation from [^{14}C]adenosine 54
hydroxyurea on 56
separation 54, 55
Deoxycytidine formation from [^{14}C]cytidine
araC on 53
distribution 51
hydroxyurea on 53, 56
separation 51, 52
2-Deoxy-2-fluoro-D-galactose (dGalF) metabolism 231–241
^{18}F-labeled in rat 238
in galactosemia diagnosis 239
metabolites in mouse liver 233–236
^{14}C-labeled studies 236
^{19}F-NMR spectroscopy 235, 239
HPLC separation 234, 239
uridylate trapping and 235, 236
possible chemotherapy application 240
syntheses of labeled 232
UTP depletion and 236, 237, 240
2-Deoxy-2-fluoro-D-galactose 1-phosphate (dGalF-1-P)
assay 232
in mouse liver from dGalF 234–237
2-Deoxy-D-galactose metabolism 231
dGalF comparison 239

Deoxyribonucleoside metabolism, role of salvage in 56
Deoxyribonucleoside 5′-triphosphates (dNTPs) *de novo* synthesis 47
Deoxyribonucleotides synthesis, effect of DNA polymerase inhibition 57, 58
Deoxyuridine
  formation from [^{14}C]cytidine
    araC on 53
    distribution 51
    hydroxyurea on 53
    separation 51, 52
  incorporation into stimulated lymphocytes 24
Dexamethasone induction of intracellular alkalinization 65–68
Diabetes
  chemotherapy 195–197
  pig ALR2 model for human 209
  sorbitol accumulation and 195, 196, 209
  type-dependent protein phosphatase G activities 310
Diacylglycerols (DGs) as signal receptor mediators 135, 137
1,5-Diaminopentane in F-MTX 4
Dibutyryl-cAMP on intracellular Ca^{2+} concentration 343
Dihydrofolate reductase (DHFR, EC 1.5.1.3)
  binding by F-MTX isomers 6
  binding to γ-F-MTX 8
Dihydrolipoamide reductase (E3, EC 1.8.1.4) in α-ketoacid dehydrogenase complex 245
5-*N*′,*N*-Dimethylamiloride inhibition of intracellular alkalinization 66, 68, 69, 71
1,2-Dioleyl-rac-glycerol (DAG) on nuclear protein phosphorylation 165–167
  second messenger role 168
Dipeptides, histidine containing *see* Histidine-containing dipeptides
DNA
  genomic, of rat liver, Southern blot analysis 291, 299
  synthesis
    in L1210 cells 47–58
      araC on 49, 50, 53, 54, 57
      HU on 49, 50, 53, 54, 56
    in quiescent 3T3 cells, mitogen stimulation 164, 169
    in regenerating rat liver, protein phosphorylation and 168
cDNA
  allele-specific oligonucleotide hybridization 249, 256
  cloning
    for 3-hydroxyisobutyrate dehydrogenase 248
    for α-ketoacid decarboxylase 248
  probes for rat liver enzymes 91, 93, 103
  rat liver fumarase
    base sequence analysis 291
    clones for mitochondrial isozyme 293
    cloning procedure 290
    consensus sequence of Kozak 294
    nucleotide map 295
    restriction endonuclease map 294
DNA polymerase (EC 2.7.7.7) inhibition by araC 57
Dolphin histidine dipeptide in muscle 177
Drug
  resistance, multi (MDR) 357–371
    cell selection for 357
    condensed ring aromatic modulators 369
      stereochemical considerations 370, 371
    mechanisms of 357
    pharmacophore structural definition 370
    properties of RES- and YOH-based modulators 365
      stereochemical considerations 366–369
  structure modeling 360
Duchenne's muscular dystrophy, histidine dipeptide content and 178
Duck muscle extracts, amino acids and histidine dipeptides during development 177

E-64c inhibition of tryptase TL 381
EGTA on nuclear protein phosphorylation 165, 166
Elastase
  A4-inhibitor on 384
  trypstatin on 383
Elongation factor 2 (EF-2)
  inactivation, consequences of 349
  kinase *see* Protein kinase III
Elongation factor (EF) Tu
  conserved regions 79
  GDP-binding domain 80
  GTP-dependent conformational change region 81, 82
  GTPase activity region 83
  in GTP-driven cycle 77

mutants 82, 83
Epidermal growth factor (EGF)
activation of glycogen synthase 322
receptor, PCS PTPase activity and 268, 269
18-Epi-reserpate (ER)
calculated 3D structure 367, 368
MDR modulator 366
on VLB cytotoxicity 365
synthesis and structure 363–365
Ethyl acetimidate activation of ALR2 200, 201

[^{18}F]dGalF positron-emission tomography *in vivo* 231, 233
rat tissue distribution 238
^{19}F-NMR spectroscopy of dGalF metabolism 231–233, 235
galactosemia diagnosis 239
in mouse liver *in vivo* 237, 239
Factor Xa inhibition
by A4-inhibitor 384
by trypstatin 379, 383
Fatty acid synthase (EC 2.3.1.85)
cDNA probe 93, 103
in mouse liver, diabetes on 100
in rat liver
activity
after weaning onto high-carbohydrate diet 94, 95, 97, 104
after weaning onto high-fat diet 97, 100, 104
at suckling–weaning transition 91, 99, 100, 104
in adult 100
mRNA
after carbohydrate-feeding sucklings 98, 99, 101
after weaning onto high-carbohydrate diet 94–97, 104
after weaning onto high-fat diet 97, 100, 104
Fluorescein isothiocyanate in F-MTX 4
Fluorescein methotrexate (F-MTX)
α-, γ-isomer separation 4, 5, 10
HPLC analysis 7
TLC data 5, 6
γ-isomer
activation 8
binding to protein 8, 9
environment on fluorescence 9
structure 4
synthesis 4, 5, 10
Fluoride on branched-chain α-ketoacid dehydrogenase 250
Folate transport proteins F-MTX
visualization of 3–10
Follicular lymphoma bc1-2 gene 145
5-Formyltetrahydrofolate substrate in folate transport system 3
Frog
histidine dipeptide in muscle 177
muscle function *in vitro*, carnosine on 178, 179, 182
SR membrane, carnosine on lipid peroxidation 184, 185
Fumarase (EC 4.2.1.2) isozymes from rat liver
antibodies 291
cytosolic
identity with mitochondrial 296, 302
modulator RNA on yield 300–302
N-terminal acetylation 289
poly(A)$^-$ RNA suppression of translation 300, 301
precursor P_2 297
mitochondrial 289
amino acid sequence
analytically confirmed 296
predicted 294–296
cDNA 290, 291
clones for 293, 302
nucleotide sequence 294, 295
poly(A)$^+$ tail 294, 295
polyadenylation signals 294, 295
N-terminal amino acid sequence
analysis 290
precursor P_1
modulator RNA on yield 300, 301
poly(A)$^-$ RNA stimulation of translation 299–301
precursor polypeptides 293
presequence 294, 295
proteolytic peptides amino acid sequences 293
analysis 290
artefacts 292
poly(A)$^+$ RNA 291
translation of mitochondrial and cytosolic precursors 297
mRNA
Northern blot analysis 291, 297
primer extension analysis 291, 297, 298
translational activity
modulation 299
modulator RNA purification and activity 300–302
poly (A)$^-$, RNA on 300
two in-phase translation activation sites 298, 299
single gene origin 299

G-proteins
heterotrimeric large M_r, Gα
α_s subunit
gene conversion to oncogene 83, 84
linear map 77, 78
on adenylyl cyclase 75
cholera toxin region 79, 83
EF-Tu mutants 79, 83, 84
function of 75–77
GDP-binding domain 79, 80
GTP
-dependent conformational change region 79–82
-driven cycle 76
GTPase
activity region 79–82
inhibition by α_s 81
ras p21 mutants 79, 81
sequence homology with bc1-2α and *ras* p21 146
signal transducing properties 75
structure model 77–79
small M_r
bc1-2α 145–151
absence of ADP-ribose acceptor 150, 151
autophosphorylating activity 150
GTP-binding ability of proteins 145, 149
GTPase activity 150
membrane localization 150
sequence homology with Gα and *ras* p21 146
family of 145
D-Galactosamine
cytotoxicity 231
metabolism 231
on hepatic UTP pools 240
Galactose dehydrogenase (EC 1.1.1.48) in dGalF determination 232
Galactosemia, clinical diagnosis by ^{19}F-NMR 239
D-Galactosone metabolism 231
dGalF comparison 239
GDP binding domains of G-protein α chain 77–80
Gene
products having GTP binding sites 145
transcription control
of glucokinase 103, 104
of phosphoenolpyruvate carboxykinase 100, 101, 104
Glucagon
levels after carbohydrate-feeding suckling rats 98
levels after weaning rats on high-carbohydrate diet 94, 95, 103
on hepatic phosphorylase phosphatase activity 310, 312, 313, 315–317
mode of action 321
on PEP carboxykinase mRNA 102
Glucokinase (EC 2.7.1.1)
cDNA probe 93, 104
in rat liver
activity
after weaning onto high-carbohydrate diet 94, 96, 97, 102, 103
after weaning onto high-fat diet 97, 102, 104
at suckling–weaning transition 91, 102, 103
mRNA
after carbohydrate-feeding sucklings 98, 99, 102, 104
after weaning onto high-carbohydrate diet 94–97, 102, 103
after weaning onto high-fat diet 97, 102, 104
Glucose
activation of ALR2 196, 210
acute effects on hepatic protein phosphatases 310–315
and insulin on phosphorylase phosphatase 311
and insulin on synthase phosphatase 311, 314, 315
in L-serine biosynthesis 14, 25, 26, 28
nonglycolytic metabolism linking ALR1 and ALR2 196
Glucose 6-phosphate cyclase in ALR2, ALR1 link 196
Glutamate in L-serine biosynthesis 14, 15
Glutamine
interorgan amino acid relationships and 28
on thymidine incorporation 24, 25
Glutathione content of human eye lens 188
Glycogen metabolism in liver 305–323
AMD and PCS protein phosphatases in 308–310
regulatory mechanisms 305, 306
Glycogen phosphorylase (EC 2.4.1.1)
glucose-induced inactivation 305
POS inhibition 109
Glycogen synthase (EC 2.4.1.11)
dephosphorylation mechanism 305, 306

EGF activation in hepatocytes 322
Glycogen synthase kinases in glycogen metabolism 306
Glycogen synthase phosphatase (EC 3.1.3.42)
activity of protein phosphatase G 310
alternative inhibition mechanisms 321, 322
AMD predominance 308
Ca^{2+} inhibition of 305, 306
glucose on 311, 314, 315
in subcellular fractions 315
insulin on 311, 312, 314, 315
multiple site phosphorylation 308
okadaic acid inhibition of 308
phosphorylase *a* inhibition of 305, 306
vanadate on 311, 312
Glycolysis rate in proliferating cells 22, 30
Glycosyl-phosphatidylinositol (glycosyl-PI) in insulin action 109
Glycosylation site of P-gp 357, 358
cGMP phosphodiesterase in GTP-driven cycle 76
Growth factors *see also* Bombesin
stimulation of Na^+/H^+-antiporter 63, 65
GTP
binding proteins
bcl-2 encoded 145–151
activities of extracts 147
antipeptide antibody binding sites 145
specificity 148
mutational analysis 75–84
concentration, tiazofurin on 39
-dependent conformational changes in G-proteins 79, 81, 82
-driven cycle of G-protein α-subunits 76
GTPase (EC 3.6.1.15)
activating protein (GAP) 77
activity
as timing device 77
of bcl-2α 150
regulating sites on G-proteins 79–81, 83
Guanine phosphoribosyltransferase (GPRT, EC 2.4.2.8) inhibition by allopurinol treatment 35
Guanosine block of tiazofurin action 39

Ha-*ras*-oncogene *see* Oncogene
HIATI inhibition of tryptase TL 381
Histamine in irradiated mouse spleen, carnosine on 190, 191
Histidine
in muscle tissues of animals 177
metabolism 179
on superoxide anion interaction 187, 188
Histidine-containing dipeptides
antioxidative properties 186
biological activity 175–192
biological significance 180–183
in muscle tissues of animals 177
localization 176
metabolic pathways 179, 180
on biological membranes 183–187
Histone H1 nuclear phosphorylation 165–168
HIV-1 (AIDS virus)
gp120 epitope NNT24
cleavage by tryptase TL-2 385, 387
identity region with trypstatin 384, 386
requirement for infection 384
tryptase TL-2 role in infection 387, 388
Homoanserine (γ-aminobutyryl-1-*N*-methylhistidine)
localization 176
metabolism 179
Homocarnosine (γ-aminobutyrylhistidine)
localization 176
metabolism 179
on lipid peroxidation 183
on superoxide anion interaction 187, 188
Hormonal control of rat liver enzymes 91–104
Hormones, acute effects on hepatic protein phosphatases 310–315
evidence for cytosolic mediators 314, 315
glucagon and vasopressin mechanisms 321
Human
c-Ha-*ras* product p21 *see also* Oncogene
amino acid homology with cystatin family 389
cathepsin inhibitory activity 388, 389
inhibition of various cysteine proteases 390
cataract, carnosine treatment on 188
erythroleukemia K562 cells, oncogene expression in 36
tiazofurin on 39
histidine dipeptide in muscle 177
leukemia
CEM/ULB_{100} cell line

multidrug resistant selection from CEM 360
plasma membranes 360
HL60 cells
oncogene expression in 36
retinoic acid 39
on differentiation 40–42
on proliferation 40, 41
synergism with tiazofurin 42
tiazofurin
down regulation 44
on differentiation 40–42, 44
on proliferation 40, 41
synergism with retinoic acid 42
tiazofurin action in 35–44
liver
ALR1 amino acid sequence 206
homology with ALR2 209, 210
cDNA E1α cloning 248, 255
lymphoblastoid Jurkat T cells
cAMP levels on Ca^{2+} 342
bc1-2α protein
immunoprecipitation 149, 150
culture 331
SEA
binding 337
on cytoplasmic Ca^{2+} 342
on DNA synthesis 335
on PKC activity 345, 346
on second messenger systems 341
stereoylated SEA antiproliferative enhancement 337, 338
lymphoblastoid Namalva B cells
culture 331
SEA binding 337
SEA on DNA synthesis 335
lymphocytes, serine metabolism in 24–29
essential amino acids, interorgan relationships 28
nucleic acid synthesis and 24–26
maple syrup urine disease
animal model 256, 260
fibroblast studies 256
gene defect responsible 256, 257, 260
mammary carcinoma, possible MRS monitoring 228
Molt 4, clone 8 cells
anti-tryptase M antibody on 385, 386
HIV-1-induced syncitia formation 385
anti-tryptase M antibody on 385
trypstatin on 385
tryptase from 380, 381
muscle ALR2 sequence
homology 206, 209, 210
peripheral blood lymphocytes (PBL) 331
SEA
binding, flow cytometry analysis 336, 337
mitogenic action 333, 334
on DNA synthesis in 334, 351
ConA on 335
TEA on 344
time dependence 335
on K^+ currents in 345
pheochromocytoma PC12 cells
culture 331
NGF on Ca^{2+} concentration 342
SEA on proliferation 339, 340
placenta ALR2 sequence homology 206, 209, 210
pre-B cells
bc1-2α protein immunoprecipitation 149, 150
GTP binding in extracts 147
nucleotide labeling 148
T cells mitogenesis by SEA-bound accessory cells 333, 334
preceding antiproliferative effect 336
tryptase M 378
β-Hydroxybutyrate on branched-chain α-ketoacid dehydrogenase 249, 250
3-Hydroxyisobutyrate dehydrogenase (EC 1.1.1.31)
cDNA clone encoding 248
inhibition by NADH 257
isolation 247
properties 257, 260
P-Hydroxypyruvate in L-serine biosynthesis 14
N-Hydroxysuccinimide activation
of F-MTX 8
of MTX 7
Hydroxyurea (HU) on ribonucleoside metabolism 49–56
ADP reduction 54
CDP reduction 53
DNA synthesis 49–51, 53
Hypoxanthine plasma levels, allopurinol on 37, 38, 43

[^{125}I]-NASV (*N*-(ρ-azido-3[^{125}I]iodosalicyl)-*N'*-(β-aminoethyl) vindesine
photoactivatible analog of vinblastine 357
binding to P-gp 357, 358

inhibition by RES- and YOH-based modulators 366
Imidazole on superoxide anion interaction 187, 188
Immune response, plasma serine concentration and 29, 30
IMP dehydrogenase (IMP DH, EC 1.1.1.205) inhibition by TAD 35, 38
Inhibitor-1 species variation 307
Inositol phospholipids of isolated nuclei 156, 157, 160, 166
Inositol triphosphate, second messenger role in nuclear PKC activity 168
Insulin
after carbohydrate-feeding suckling rats 98, 104
after weaning rats onto high-carbohydrate diet 94, 95
glucose and, on hepatic phosphorylase phosphatase 311
glucose and, on hepatic synthase phosphatase 311, 314, 315
mediator glycosyl-PI 109
on fatty acid synthase mRNA 100, 104
on glucokinase mRNA 102–104
on PEP carboxykinase mRNA 102, 104
stimulated POS transport system 115
stimulation of ATP citrate lyase phosphorylation 111–113
stimulation of hepatic phosphorylase phosphatase activity 310
effects of 322
stimulation of nuclear phosphorylation 157, 168
Insulin-like growth factor-I (IGF-I) on nuclear protein phosphorylation 164–168
^{32}P incorporation in isolated nuclei 156
polyphosphoinositide labeling
in isolated nuclei 160, 163, 164
in whole cells 160–162
metabolism 157
γ-Interferon synthesis, SEA induced 334, 339
Interleukin-2 synthesis, SEA induced 334, 339
1-(5-Isoquinolinylsulfonyl)-2-methyl piperazine (H7) on nuclear protein phosphorylation 165, 167

K^+-channels
blockage on mitogenesis 343
in SEA-second messenger systems 347
Kalanchoe PEPc
kinase 127
phosphorylation 125
Kallikrein inhibition by A4-inhibitor 384
kinase 127
phosphorylation 125
Kallikrein inhibition by A4-inhibitor 384
α-Ketoacid decarboxylase (E1, EC 1.2.4.4)
α subunit
cDNA cloning 248, 255, 259
homologies 256
in maple syrup urine disease 256, 257, 260
in α-ketoacid dehydrogenase complex 245, 246
in rats in various nutritional states 252
phosphorylation of 245
serine sites 246, 254, 255
α-Ketoacid dehydrogenase complex 245–260
activation 248
associated kinase 245, 246, 248–250, 252–255
constituents and structure of 245, 246
extraction of 247, 248
cDNAs for 248
hepatic enzyme, nutrition on activity state 246, 247, 259
in vivo activity state
assay 250, 251
diabetes, streptozotocin induced, on 251
protein levels on 251–253
purification 247
regulation in rat hepatocytes 249, 250
α-Ketoacid dehydrogenase phosphatase M_r 246
α-Ketoisocaproate on branched-chain α-ketoacid dehydrogenase 249, 250
α-Keto-β-methylvalerate on branched-chain α-ketoacid dehydrogenase 250
α-Ketovalerate on branched-chain α-ketoacid dehydrogenase 250

Lactate dehydrogenase (EC 1.1.1.27) equilibrium, NAD/NADH ratio and 18
Lactobacillus casei
folate transport protein 3
binding to α-F-MTX 8
spheroplast labeling with activated γ-F-MTX 9

Lamprey histidine dipeptides in muscle 177
Leucine role in branched-chain γ-ketoacid dehydrogenase regulation 249
Leupeptin inhibition of tryptase TL 381
Lipid peroxidation, carnosine on 183, 184
Lipids of nucleus, distribution 155
Lipogenesis in rat liver at suckling–weaning transition 91, 103
Lipoprotein lipase (EC 3.1.1.34) cell surface attachment 115
Liposome preparation, use of carnosine in 189
Luminol (5-amino-2,3-dihydroxy-1,4-phthalasine) dione superoxide anion interaction inhibition 188
Lymphocytes, glycolysis rates in 22
Lysine in ALR2-pyridoxal-P complex 207, 208

α_2-Macroglobulin inhibition of tryptase TL 381
Magnetic resonance spectroscopy *see* ^{31}P magnetic resonance spectroscopy
Maize *see Zea mays*
Malate inhibition
  of C_4 PEPc 125
    light/dark changes 126
  of CAM PEPc 123–125
    diurnal rhythm 124
Malic enzyme
  in C_4 pathway 122
  in CAM pathway 122
Mast cell tryptase *see* Tryptase M
Maturation promoting factor (MPF) in oocytes 276, 277, 280
Membrane-associated MTAg:pp60$^{c\text{-}src}$:PI-kinase complexes 135
  co-mitogenic action 138
  consequences of signaling 136, 137
  stimulation of autocrine growth factors 138
Mesembryanthemum crystallinum, PEPc regulation in 123, 124
Metabolic control theory, serine biosynthesis application 15–23, 29
  conclusions of analysis 21–23
  dependence on physiological conditions 23
  elasticity coefficients 17, 18
  feedback 22
  flux control coefficient 15, 16, 18
  flux response coefficient 20
  metabolite concentration control coefficients 20
  relation to glycolytic rates 23
Methotrexate (MTX)
  activation 6, 7
  resistant L1210 cell line 10
  structure 4
  transport 3
Methyl 18-epi-reserpate (MER) synthesis and structure 363–365
Methyl reserpate (MR)
  on VLB cytotoxicity 365
  synthesis and structure 363–365
Methylmalonate-semialdehyde dehydrogenase (EC 1.2.1.27)
  isolation 247
  purification 258
  reactions catalyzed by 259, 260
Methyltetrahydrofolate substrate in folate transport system 3
Mg^{2+} requirement in PCS PTPase activity 268, 273–276
Microtubule-associated protein (MAP)
  inhibition of PTPase activity 267, 279
  regulation of PCS_L phosphatase 270–272
Microtubules
  assembly and disassembly rates 272
  stimulation of PCS_L phosphatase 271
Mitochondrial oxidative phosphorylation, control structure of pathway 22
Mitogen stimulation
  of bc1-2 gene 145
  of human lymphocytes 24
  of Na^+/H^+-antiporter 63
  on nuclear protein phosphorylation in 3T3 cells 164–168
Modulators of VLB cytotoxicity in MDR cells 357–370
  condensed-ring aromatic 369
  index (MI)
    definition 361
    of selected modulators 362
      molar refractivity correlation 362, 363, 366
      partition coefficient correlation 362, 363
    molecular properties required 362, 365
    RES- and YOH-based 365
      conformational analysis 367
      structural commonality of 368
Mouse
  L1210 cells
    DNA synthesis in 47–58
      araC inhibition and ribonucleotide flux 57, 58

[^{14}C]adenosine metabolism 48
[^{14}C]cytidine metabolism 48
micromolar folate transport system 3
inhibition by F-MTX isomers 7, 8
inhibition by MTX 6
labeling with activated γ-F-MTX 10
liver, dGalF metabolites 233–235
^{14}C-labeled studies 236
^{19}F-NMR *in vivo* 237
mammary tumor virus-long terminal repeat (MMTV-LTR) promoter MTAg induction, responses to 136, 138
pre-B cells
bcl-2α protein immunoprecipitation 149, 150
GTP binding in extracts 147
nucleotide labeling 148
radioprotection by carnosine 189–191
S49 cells
cyc$^-$ mutant 78, 81
mutant α_s chains 78
unc mutant 78
3T3 cells
agar growth, conditions required for 138, 139
bcl-2α transfected, extracts GTP binding in 147, 148
antibody reactions and 149
Ha-*ras* transfection, effects of 65
IGF-I and bombesin on nuclear polyphosphoinositide metabolism 157, 158, 160–164, 166
IGF-I and bombesin on nuclear protein phosphorylation 164, 165, 167
MTAg:pp60$^{c\text{-}src}$:PI-kinase complex, phosphorylation 134
nuclei
EM 160
^{32}P-γ-ATP labeling 159
phosphorylation in 164, 165
Ca^{2+} dependency 166, 167
production of SAGF 139
whole cell
^{3}H-myo-inositol labeling 158
^{32}P-γ-ATP labeling 158
3T6 cells dNTP pool regulation 57
Muscle
as source of essential amino acids 28
function, carnosine and anserine on 178, 179
pathologies, histidine dipeptide content and 178
myc-oncogene *see* Oncogenes
Myo-inositol oxygenase in ALR1 pathway 196

Na^+/H^+-antiporter
activation
by Ha-*ras* oncogene 63–71
pH dependence 70
biological significance 68, 70
PKC-independent mechanism 67
stimulation *via* PKC 65
NAD/NADH in L-serine biosynthesis 14, 15, 18
NADH
ALR2 kinetic constant 203
inhibition of 3-hydroxyisobutyrate dehydrogenase 257
NADP-dependent malate dehydrogenase
in C_4 pathway 122
in CAM pathway 122
$NADP^+$ ALR2 kinetic constant 203
NADPH ALR2 kinetic constant 203, 208
NASV *see* [^{125}I]-NASV
Neoplastic transformation, viral
early gene expression for 133
MTAg induction of 136, 137
MTAg:pp60$^{c\text{-}src}$ complex and 134
Nephropathy, ALR2 involvement 196
Neuropathy, ALR2 involvement 196
NMN^+ ALR2 kinetic constant 203
NMR applications to tumor growth measurement 217–229
Nuclear inositol lipids 155–169
Nuclei
^{32}P-γ-ATP labeling 159
IGF-I on 156
phospholipids in 155
Nucleic acids, serine incorporation into 25, 26

Octopus β-alanine and histidine in muscle 177
Okadaic acid (OA)
induced maturation of oocytes 276–278
germinal vesicle breakdown 277, 280
MPF in 277
inhibition of protein phosphatases 127, 128, 267, 308
in liver 308, 309
Oncogenes
Ha-*ras*-, stimulation of Na^+/H^+-antiporter 63–71
cytosolic alkalinization by 65–68

PKC independence 66, 67
transfection of 3T3 cells 65
Ha-*ras*-proto-, transfection of 3T3 cells 65
myc-, down regulation
by retinoic acid 39, 44
by tiazofurin 43
in 3924A cells 43, 44
in HL60 cells 39, 43, 44
in K562 cells 44
PTPases as anti- 265, 279
ras
down regulation
by tiazofurin 39, 42–44
in 3924A cells 44
in HL60 cells 39, 43, 44
in K562 cells 44
p21 protein
cholera toxin region 83
conserved sequences 79
GDP-binding domain 80
GTP-dependent conformational change region 81, 82
GTPase activity region 82
in GTP-driven cycle 77
mutants 80–83
similarity to bc1-2 protein 146, 149, 150
src see Cellular *src* gene protein
Oocytes (*Xenopus*)
meiotic cell division processes 279
okadaic acid induced maturation 276–278
germinal vesicle breakdown 277
MPF during cell cycle 277
PCS_L phosphatase isolation from 267
PTPA 273
PTPase 266
stabilization in extracts 272
Ophidine (β-alanyl-3-*N*-methylhistidine)
in muscle tissues of animals 177
localization 176
metabolism 179
Ornithine aminotransferase (EC 2.6.1.13)
antibodies 291
mRNA translation 300
Ox, histidine dipeptide in muscle 177
2-Oxoglutarate in L-serine biosynthesis 14, 15
Oyster, β-alanine and histidine in muscle 177

^{31}P magnetic resonance spectroscopy (MRS) of tumors 217–229
changes observed
during growth 227
during regression 228
PCr/NTP ratio, comparison with extract data 219–223
rat mammary adenocarcinoma 219–225
rat prolactinoma 219–226
surface coil response, validation of 218
P-glycoprotein (P-gp) multidrug resistance (MDR) and 357–371
binding of modulators, requirements 368, 370
binding of NASV 357
modulator inhibition of 366
cellular function 357, 358
chloroquine binding 358
chlorpromazine binding 358
reserpine binding 358
structure 357
transmembrane spanning 357, 358
verapamil binding 358
Papain
A4-inhibitor on 384
c-Ha-*ras* p21 on 389–391
trypstatin on 383
PEI-cellulose TLC separation of ATP and phosphate 111
Pelanyd histidine in muscle 177
Pentose phosphate pathway ALR1 metabolism and 196
Pepstatin on tryptase TL 381
Peptide RR-*src*
autophosphorylation site 268
inhibition of PCS_L phosphorylase phosphatase 269
Pertussis toxin on cytosolic alkalinization 68
Phosphatase in ALR2, ALR1 link 196
Phosphatidylinositol (PI) metabolism 134
Phosphatidylinositol (PI) kinase
association with MTAg:pp60$^{c\text{-}src}$ complex 134
on PKC activity 136
phosphorylation 134, 135
signal priming role 135, 136
in signaling system 134
phosphorylation, PDGF receptor and 135
Phosphatidylinositol-3-phosphate (PI-3-P) stimulation of PKC 135
Phosphatidylinositol-4-phosphate (PtdInsP) mitogen effect on, in nuclei and whole cells 160–164, 166, 168
Phosphatidylinositol-4,5-phosphate ($PtdInsP_2$) mitogen effect on, in

nuclei and whole cells 160–164, 166, 168
Phosphatidylserine (PS) on nuclear protein phosphorylation 165–167
Phosphocreatine (PCr)/βNTP ratios
mammary tumor regression and 223, 224
tumor size and 220, 221, 225
Phosphodiesterase (EC 3.1.15.1)
in SEA-second messenger interactions 346, 347
regulation 343
Phosphoenolpyruvate carboxykinase (EC 4.1.1.32)
cDNA probe 93, 103
in rat liver
activity
after weaning onto high-carbohydrate diet 94, 96, 97, 103, 104
after weaning onto high-fat diet 97, 104
at suckling–weaning transition 91, 101, 104
mRNA
after carbohydrate-feeding sucklings 98, 99, 101
after weaning onto high-carbohydrate diet 94, 96, 97, 104
after weaning onto high-fat diet 97, 104
regulatory role 101
insulin regulation of 102
Phosphoenolpyruvate carboxylase (PEPc, EC 4.1.1.31) regulation in higher plants 121–129
in C_4 pathway 122
malate sensitivity, light and darkness on 125, 126
in CAM pathway 122
circadian rhythm 124
malate sensitivity, phosphorylation and 123–125
isoenzymes 122
reaction catalyzed 121
signaling systems 129
Phosphoenolpyruvate carboxylase kinases 127
Phosphoenolpyruvate carboxylase phosphatases 127–129
3-Phosphoglycerate in L-serine biosynthesis 14, 15, 18, 19, 21
concentration insensitivity 22
3-Phosphoglycerate dehydrogenase (EC 1.1.1.95) in L-serine, biosynthesis 14, 18, 19, 21
Phosphoinositol cycle in SEA-second messenger interactions 346, 347
Phospholipid, chromatin attached
cell cycle variation 156
on RNA synthesis regulation 155, 157
Phospho-oligosaccharide (POS)
cell surface location 115
from glycosyl-PI, properties 109
possible physiological role 115
stimulation of ATP citrate lyase phosphorylation 111–114
identity with insulin site 113, 115
Phosphorus
inorganic (Pi) fraction free in tumor and normal tissues 227, 228
metabolites
high energy status
tumor size and 220, 221
tumor treatment and 229
ovariectomy on distribution in tumor 225
Phosphorylase *a* inhibition of glycogen synthase phosphatase 305, 306
Phosphorylase kinase (EC 2.7.1.38)
hepatic absence in *gsd*/*gsd*/rats 316, 317
in glycogen metabolism 306
hormonal control of 313, 316, 317
inhibition of phosphorylase phosphatase 317–321
via intermediate phosphorylation 320
Phosphorylase phosphatase (EC 3.1.3.17)
activity of protein phosphatase G subunit 309
AMD and PCS distribution 309, 323
glucagon on 312, 313, 315–317, 321
glucose on 311, 316
hormonal inhibition mechanism 315–321
in glycogen metabolism 306
inhibition by phosphorylase kinase 317–321
demonstration of indirect 319–321
insulin on 310–312, 316
vanadate on 311, 312
vasopressin on 312, 313, 315–317, 321
Phosphorylation of nuclear proteins
polyphosphoinositide breakdown and 166
second messenger action 157
Phosphoserine in L-serine biosynthesis 14, 15, 17–21
3-Phosphoserine aminotransferase (EC 2.6.1.52) in L-serine biosynthesis 14, 18, 19, 21
Phosphoserine phosphatase (EC 3.1.3.3)

in L-serine biosynthesis 14, 29
elasticity coefficients 17, 21
Phosphotyrosyl phosphatase (PTPase)
activation 265–281
by PTPA 272–276, 279
catalytic site 274
comparison with AMD phosphatase 275
as anti-oncogene 265, 279
ATP and PPi mediated stimulation 268, 269, 279
categories of 266
in cell-cycle regulation 266, 276–278
okadaic acid on 278
Phosphotyrosyl phosphatase activator (PTPA) 267
as anti-oncogene 276
isolation 272
on PCS phosphatase 272–276, 279, 280
properties 273
purification 273
site of action 274
specificity 274
Phytohemagglutinin (PHA) stimulation of human lymphocytes 24
serine on 24
Pig muscle ALR2 *see also* Aldose reductase
amino acid sequence homology 206, 209, 210
as model for inhibitor studies 197
phosphopyridoxal modified residue in 206
similarity to human 209
Plasmin inhibition by A4-inhibitor 384
Platelet-derived growth factor (PDGF) on PI kinase phosphorylation 135
Polycation-stimulated (PCS) protein phosphatases 265–281
ATP/PPi stimulation uniqueness 270
conversion to PTPases 267, 269, 278
from skeletal muscle 267, 271
in cell proliferation 280
okadaic acid on 267, 276–278
PCS_L
activation by PTPA 272–276, 279
characteristics 275
dependencies 273
pH optimum 276
substrate inhibition 274
time courses 273
purification from oocytes 267
activities after 268
pNPP inhibition 268
product inhibition 269
PTPase activity 269
RR-*src* inhibition 270
regulation by tubulin and MAP2 270–272
Ser/Thr phosphatases and 266, 276, 278, 279
stimulation of aryl phosphatase activity 267–270, 272
Polyol pathway ALR2 metabolism and 196
Polyoma virus tumor antigens 133–139
early gene proteins 133
large T antigen (LTAg) cell immortality and 133
in PI-dependent network 135
middle T antigen (MTAg) cell transformation and 133, 134
expression, on PKC activity 136
induction of MMTV-promoter 136
phosphorylation 134
$pp60^{c\text{-}src}$ complex 134
small T antigen 133
3T3 cell requirement for transformation 138, 139
Polyphosphoinositide labeling
in 3T3 cells 160–162
nuclei 160, 163, 164
V8 Protease (EC 3.4.21.19) degradation of fumarases 290, 292, 302
Proteases
intracellular, and their inhibitors 377–391
serine, in mast cells
MCSP-I, chymase 378
activities on synthetic substrates 380
MCSP-II, atypical chymase 378
tryptase M *see* Tryptase M
Protein *see also* G-protein
intake on branched chain α-ketoacid dehydrogenase activity 246, 247, 249–253
ras p21 *see* Oncogenes *ras* p21 protein
Protein kinase III (Ca^{2+}-calmodulin dependent, EF-2 kinase)
assay 333
BacM activation 349, 350
function 349
Protein kinase C (Ca^{2+}- , cAMP- , phospholipid-dependent, PKC, EC 2.7.1.37)
activation on K^+ current 345
activity in Jurkat cells 345
assay 64, 333
depletion by TPA 66
Ha-*ras* activation 63, 66, 67
in glycogen metabolism 306

in nucleus 156, 157
activation from polyphosphoinositide metabolism 157, 158, 164, 166–168
dual substrates 167
evidence for activity 167
inhibitors on nuclear phosphorylation 165, 167
second messengers for 168
in SEA-second messenger interactions 346, 347, 350
inhibition by staurosporine 65
interaction with PI kinase complex 135–138
phosphorylation of phosphorylase kinase 319
protein phosphatase G substrate 309
signal transduction 133
Protein kinase F_A activation of AMD phosphatase 275
Protein kinase of branched-chain α-ketoacid dehydrogenase 245, 246
in rats in various nutritional states 252, 253
inhibitors of 246
branched-chain α-ketoacids 252
α-chloroisocaproate 246, 248–250, 254, 255
on serine sites on E1 255
monovalent cations on 254, 255
Pi on 254, 255
Protein kinase of PEPc 127
Protein kinase (EC 2.7.1.99) of pyruvate dehydrogenase complex, characterization 246
Protein phosphatase G
glycogen synthase phosphatase activity in diabetes 310
properties 309
regulatory subunits 309, 310
Protein phosphatase (Mg^{2+}-dependent, type 2C) in liver 127, 308
insulin on 313, 314
Protein phosphatases
classification of 127, 267
in cell cycle 276–278, 280
in hepatic glycogen metabolism 305–323
acute effects of hormones and of glucose 310–315
types involved 313
three levels of action 306, 322, 323
nomenclature of multisubstrate 266, 267
of PEPc, substrate specificities 127–129
okadaic acid sensitivities 127, 128
AMD Protein phosphatases (type 1, ATP-Mg-dependent)
general properties 127, 307
glycogen synthase phosphatase activity 308
in *gsd/gsd* rats 316–318
inhibitors of 307
insulin and glucose on 313, 322
phosphorylase phosphatase activity 309
PCS Protein phosphatases (type 2A, polycation stimulated)
general properties 127, 307, 308
phosphorylase phosphatase activity 309
Proteins, HMG, nuclear phosphorylation 166, 167
PSTI inhibition of tryptase TL 381
Pyridine-3-carboxaldehyde, ALR2
activation 200, 201
kinetic constant 203
Pyridoxal activation of ALR2 200, 201
Pyridoxal-5′-diphospho-5′-adenosine (PLP-AMP) activation of ALR2 200, 201
Pyridoxal-5′-phosphate (pyridoxal-P)
activation of ALR2
derivative formed 202–205
peptide sequence analysis 205, 206
reaction characteristics 201, 202, 205, 207
stoichiometry of 205, 208, 210
via lysine 207–209
^3H-labeled preparation 199
modification of ALR2 lysine residues 198
peptides, isolation 200
Pyrimidines, catabolic pathways 259
Pyruvate, phosphoserine biosynthesis and 14
Pyruvate dehydrogenase (EC 1.2.4.1)
POS stimulation 109, 115
regulation by reversible phosphorylation 121
Pyruvate dehydrogenase complex (EC 1.2.4.1 + EC 2.3.1.12 + EC 1.8.1.4)
homology with E1α subunit 260
phosphorylation 246
Pyruvate dehydrogenase phosphatase (EC 3.1.3.43) 246
Pyruvate kinase (EC 2.7.1.40) POS stimulation 109
Pyruvate phosphate dikinase (EC 2.7.9.1)
in C_4 pathway 122
in CAM pathway 122

regulation by reversible phosphorylation 121

Rabbit
liver
3-hydroxyisobutyrate dehydrogenase 247, 257
L-serine biosynthesis in 15, 17
comparison with rat liver 23
control analysis 18–23
skeletal muscle
PCS protein phosphatases 267, 271
PTPA 273
Rat
adipocytes
ATP citrate lyase phosphorylation in 109, 110
insulin stimulation 111, 112
POS stimulation 111, 112
cell extracts 111
POS stimulated phosphorylation in 112
preparation 110
fibroblast F111 cells, transformation by viral antigens 136–139
MTAg expression on PKC activity 136
SAGF on 139
TPA enhanced proliferation 137
GH3 prolactinomas, MRS studies 219–228
cell population after irradiation 228
correlation between tumor volume and high/low energy phosphate 220, 221, 225, 226
free ADP in 227
histology 220–223
immunocytochemistry 220
radiation-induced regression 219, 225, 226
radiation on PCr/NTP 225, 226
gsd/gsd strain
absence of hepatic phosphorylase kinase 316
comparison with Wistar hormonal response 316–318, 323
phosphorylase phosphatase in liver cytosol, hormone responses 316–318
hepatocytes
branched-chain α-ketoacid dehydrogenase activity 250
isolation 247
hepatoma 3924A cells, oncogene expression in 36
down regulation 39, 42, 44
kidney KSV-NRK cells, $p21^{K\text{-}ras}$ mitogenic signals 137
lens ALR2 amino acid sequence homology 206, 209, 210
liver
branched-chain α-ketoacid dehydrogenase, protein diet on 253
changes at suckling–weaning transition 91–104
E1α cDNA 248, 255
fumarase isozymes 289–302
3-hydroxyisobutyrate dehydrogenase 248, 258
perfused, acute effects on protein phosphatases
of glucagon 312, 313
of glucose 311
of insulin 311, 312
of vanadate 311, 312
of vasopressin 312, 313
T51B epithelial cells, SAGF on 139
mammary adenocarcinomas, NMV induced, MRS studies 219–225
free ADP in 227
free Pi in 227
histology 220, 221, 224–226
ovariectomy
on ^{31}P MR spectra 225, 228
on PCr/NTP 223, 224, 228
on regression 219, 223
tumor size and high/low energy phosphate 221
nutrition on branched-chain α-ketoacid dehydrogenase activity 246, 247, 251–253
Sprague-Dawley rat, [^{18}F]-dGalF metabolite distribution in 238
liver concentration 239
tryptase M 378
Walker sarcoma, high energy phosphate in 227
Reserpic acid (RA)
on VLB cytotoxicity 365
synthesis and structure 363–365
Reserpic acid lactone (RAL)
on VLB cytotoxicity 365
synthesis and structure 363–365
Reserpine (RES)
analogs
preparation 358, 359, 362–365
structures 364
binding to P-gp 358
MDR modulator 359, 362, 366
index 362
molar refractivity 361
octanol/water partition 361

on VLB cytotoxicity 365
structure 359, 362
calculated 3D 367, 368
Retinoic acid
down regulation of *myc* oncogene 39
on HL60 cells 39
cytotoxicity 39–43
induced differentiation 39–42
synergism with tiazofurin 41–44
Retinopathy, ALR2 involvement 196
Ribonucleotide reductase (EC 1.17.4.1)
activity, cell cycle variation 47, 56
inhibition by hydroxyurea 49, 53, 56, 58
regulation 47
substrate cycle 47, 48, 56, 57
Ribonucleotide 5′-triphosphates (NTPs) allosteric regulation of ribonucleotide reductase 47, 56
mRNAs of rat liver enzymes
changes after carbohydrate-feeding sucklings 98–101
changes after weaning 94–97, 100
cDNA probes 93
thyroid hormone stimulation 101
Rook histidine dipeptide in muscle 177

Salmon, histidine dipeptide in muscle 177
L-Serine
biosynthesis
control analysis 15–23
control coefficients 16–18
elasticity coefficients 17, 18, 21
flux response coefficient 20
in rabbit liver 18
inhibition of phosphoserine phosphatase 17, 29
metabolite-concentration control coefficients 20
methods of 15
de novo pathway 14
feedback control 22, 29
intermediates in rabbit liver 15–23
rate-limiting steps 15
concentration, immune response and 29, 30
concentrations in liver 29
conditionally essential requirement for 13
metabolism in human lymphocytes 24–29
incorporation from glucose 25, 26
nucleic acid synthesis and 24–27
phosphorylation site of ATP citrate lyase 112
production and use in various tissues 28
Serine hydroxymethyltransferase (EC 2.1.2.1)
activity in stimulated lymphocytes 25, 26
serine concentration on 27
inhibition on thymidylate synthesis 28
Serotonin in irradiated mouse spleen, carnosine on 190,191
Skate, β-alanine in muscle 177
Snake, histidine dipeptide in muscle 177
Sorbitol dehydrogenase in polyol pathway 196
Sorghum PEPc kinase 127
Sphingosine on nuclear protein phosphorylation 165, 167
Squid, β-alanine and histidine in muscle 177
Staphylococcal enterotoxin A (SEA) 331–352
aminosugars on activity 338, 339
antiproliferative effect 334–338, 352
K^+-channel involvement 343–345
binding to low affinity receptor 337, 339, 342
binding to PBL cells 336, 337
characteristics 331
dose-dependent DNA synthesis 334, 335
TEA on 344
encoding-gene cloning 350, 351
anti-SEA immunoblotting 351
entA strain variations 351
interaction with intracellular structures 347–350
interaction with receptor-dependent systems 340, 341
interaction with second messenger systems 346, 347
mechanism of action 349, 350
on cell proliferation 333
on cytoplasmic Ca^{2+} 342, 343
on K^+ currents 344, 345
on PKC activity 346
proteolysis, BacM formation and 348, 349
stearic acid-acylated 337, 338
T cell mitogenesis, accessory cell requirement 333
Staurosporine
inhibition of PKC 65
on intracellular alkalinization 66
Sturgeon, histidine dipeptide in muscle 177
Substrate cycles in dNTP pools 47, 48, 56, 57

Sucrose phosphate synthase (EC 2.4.1.14)
regulation by reversible phosphorylation 121
Superoxide anion-luminol interaction inhibition 188
Superoxide dismutase on superoxide anion interaction 188

TAD (thiazole-4-carboxamide adenine dinucleotide)
concentration and plasma tiazofurin in patients 36
production from tiazofurin in patients 37
assay procedure 37
12-*O*-Tetradecanoylphorbol-13-acetate (TPA)
induced intracellular alkalinization 66, 67
on F111 cell proliferation 137
on MTAg phosphorylation 134
on PKC-membrane association 135, 136
Tetraethylammonium (TEA) on DNA synthesis in SEA-treated cells 343, 344
Thin-layer chromatography (TLC) of F-MTX isomers 6
α-Thrombin
A4-inhibitor on 384
trypstatin on 383
Thymidine formation from [^{14}C]cytidine
araC on 53
distribution 51
hydroxyurea on 53
separation 51, 52
Tiazofurin (TR, 2-β-D-ribofuranosyl-4-carboxamide)
action in leukemia 35–44
conversion to TAD in patients' mononuclear cells 37
down regulation of *ras* oncogene 39, 43
induced differentiation in patients 35
on GTP concentration in leukemic cells 39
on HL60 cells 39
cytotoxicity 40, 41
induced differentiation 39–42
synergism with retinoic acid 41–44
α-Tocopherol on carnosine antioxidant activity 186, 187
TPCK inhibition of tryptase TL 381
Transacylase (E2) in α-ketoacid dehydrogenase complex 245
Transducin chain
cholera toxin on 84
photorhodopsin coupling 75
Transmembrane signaling, G-protein α subunit in 76
Trimethoxybenzoylyohimbine (TMBY)
calculated 3D structure 367, 368
comparison with verapamil 369
MDR modulator 366
on VLB cytotoxicity 365
synthesis 363, 364
Trinitrobenzenesulfonate activation of ALR2 200, 201
Trypsin
inhibition by A4-inhibitor 384
inhibition by trypstatin 383
Trypsin inhibitors 381–384
A4-inhibitor in Alzheimer amyloid precursor
homologies 382
inhibition of various proteases 383, 384
properties 382
aprotinin, homologies 382
inter-α-trypsin inhibitors, homologies 382
trypstatin
amino acid sequence 382
homologies 382
inhibition of various proteases 378–381, 383
Trypstatin
amino acid sequence 382
identity with gp120 epitope of HIV-1 384, 386, 390
anticoagulant role 378, 379
homology with other Kunitz-type inhibitors 381, 382
inhibition of tryptase M 378, 379
inhibition of tryptase TL 380–382, 385
inhibition of various proteases 383
on HIV-1 induced syncytia 385
Tryptase M
activities on synthetic substrates 380
inhibition by A4-inhibitor 384
inhibition by trypstatin 383
on blood coagulation 378
on fibrin deposition 378, 379
on prothrombin 379
properties 378
stereostructure 379
Tryptase TL
from human helper T-lymphocytes, TL-1
inhibition by various agents 381
properties 380
from human Molt 4, clone 8 cells, TL-2
cleavage of NNT-24 of gp120 epitope 385, 387

inhibition by various agents 381
possible role in HIV-1 infection 385, 387, 388
properties 380
Tryptophan catabolism, enzyme control and 16
Tryptophan dioxygenase in tryptophan catabolism 16
Tubulin regulation of PCS_L phosphatase 270–272, 279
on pNPPase activity 271
shielding of MAP2 271
specificity 271
Tumor
G-protein cholera toxin region 83, 84
growth and regression, ^{31}P MRS studies 217–229
Tyrosine kinase equilibrium with phosphatase 265, 279
Tyrosine residue phosphorylation, cellular signaling and 134–136
Tyrosyl phosphorylation
balance in cells 265
PCS protein phosphatases and 266

UDP-2-deoxy-2-fluoro-D-hexoses (UDP-HexF) in mouse liver from dGalF 234–237, 240
UDP-dGlcF in liver from dGalF 234–237
UDP-glucose dehydrogenase (EC 1.1.1.22) in UDP-glucose determination 232
UDP-glucose pyrophosphorylase (EC 2.7.7.9) in UDP-dGlcF determination 232
Uridine formation from [^{14}C]cytidine 54, 56
separation 51, 52
Uridylate trapping, dGalF induced 235–237, 239
Urokinase, A4-inhibitor on 384
UTP depletion *in vivo* by dGalF 231–241

Valine catabolism
3-hydroxyisobutyrate dehydrogenase and 257
pathway 258–260
Vanadate
comparison with insulin 311, 312
on hepatic protein phosphatase activities 311, 312
Vasopressin on hepatic phosphorylase phosphatase activity 312, 313, 315–317
mode of action 321
Verapamil
binding to P-gp 358
MDR modulator 359
index 362
molar refractivity 361
octanol/water partition 361
structure 359
calculated 3D 368, 369
Vinblastine (VLB)
cytotoxicity enhancement
by RES, YOH and analogs 365
modulator index and 361, 362
modulators 357–370
photoactivable analog [^{125}I]-NASV 357
Vindoline
MDR modulator 359
index 362
molar refractivity 361
octanol/water partition 361
structure 359

Whale, histidine dipeptide in muscle 177

L-Xylulose in pentose phosphate pathway 196

Yohimbine (YOH)
analogs preparation 359, 363, 364
on VLB cytotoxicity 365

Zea mays (Maize)
C_4 pathway 122
PEPc kinase activity 127
PEPc phosphatase 128
PEPc sensitivity to malate 125, 126